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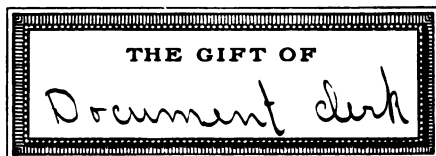
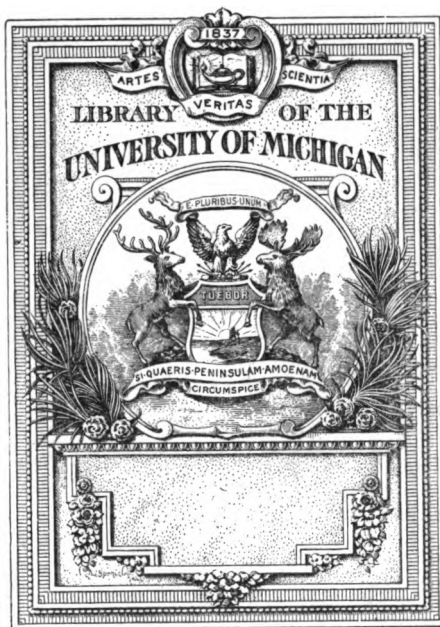
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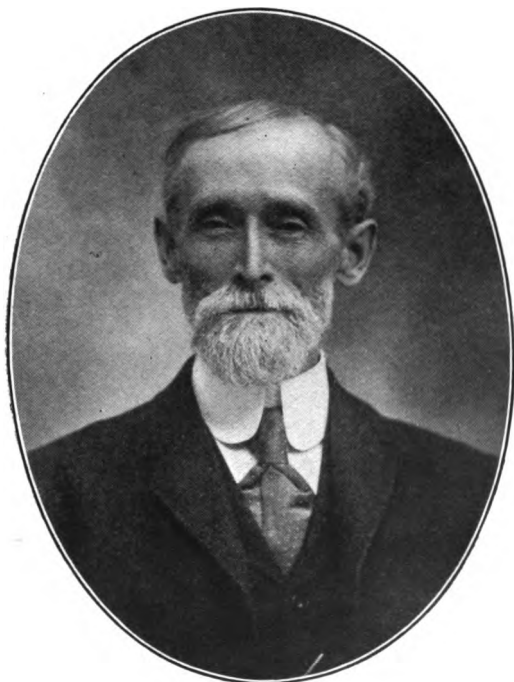
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HENRY IRICK BUDD.

Secretary of the New Jersey State Horticultural Society
From 1893 to 1905.

Born March 21, 1836.

Died January 14, 1905.

PROCEEDINGS
OF THE
State Horticultural Society

AT ITS
Thirtieth Annual Session

HELD AT
TRENTON, N. J.
January 5th and 6th, 1905

Organized August 17, 1876. Incorporated December 15, 1887.



TRENTON, N. J.
MACCRELLISH & QUIGLEY, STATE PRINTERS, OPPOSITE POST OFFICE.

1905

**Gift of N. J.
Document Clerk
May 13, 1908.**

LIST OF OFFICERS, 1905.

President.

WILLIAM H. SKILLMAN, ... R. F. D., Belle Mead, Somerset County.

Vice-President.

HORACE ROBERTS, ... Fellowship, Burlington County.

Secretary.

HENRY I. BUDD, ... Mount Holly, Burlington County.

Treasurer.

IRA J. BLACKWELL, ... Titusville, Mercer County.

Executive Committee.

DR. J. B. WARD, ... Lyons Farms, Essex County.
E. P. BEEBE, ... Elizabeth, Union County.
D. AUG. VANDERVEER, ... Freehold, Monmouth County.
W. H. REID, ... Tennent, Monmouth County.
H. E. HALE, ... Princeton, Mercer County.

Fruit Committee.

CHARLES BLACK, ... Hightstown, Mercer County.
SAMUEL C. DeCOU, ... Moorestown, Burlington County.
H. V. M. DENNIS, ... Freehold, Monmouth County.
A. E. HEDDEN, ... Verona, Essex County.
JOHN REPP, ... Glassboro, Gloucester County.
W. H. MORGAN, ... Westmont, Camden County.

Flower Committee.

E. P. BEEBE, ... Elizabeth, Union County.
HIRAM T. JONES, ... Elizabeth, Union County.
F. C. GOBLE, ... Verona, Essex County.
DR. WALTER VAN FLEET, ... Little Silver, Monmouth County.

Vegetable Committee.

HOWARD G. TAYLOR, ...Riverton, Burlington County.
 JOSEPH BARTON, ...Marlton, Camden County.
 E. A. SEXSMITH, ...Wall, Monmouth County.
 ALBERT REPP, ...Glassboro, Gloucester County.
 CYRUS B. CRANE, ...Caldwell, Essex County.

Special Fruit and Flower Committee.

DR. J. B. WARD, ...Lyons Farms, Essex County.
 F. C. GOBLE, ...Verona, Essex County.
 I. J. BLACKWELL, ...Titusville, Mercer County.
 DAVID BAIRD, ...Baird, Mercer County.
 J. C. WILLIAMS, ...Montclair, Essex County.

Legislative Committee.

DR. J. B. WARD, ...Lyons Farms, Essex County.
 S. B. KETCHAM, ...Pennington, Mercer County.
 CHARLES BLACK, ...Hightstown, Mercer County.
 ABRAM C. HOLDRUM, ...Westwood, Bergen County.
 ELIAS S. BLACK, ...Hightstown, Mercer County.

Delegates to State Board of Agriculture.

ELIAS S. BLACK (one year), ...Hightstown, Mercer County.
 ALBERT REPP, (two years), ...Glassboro, Gloucester County.

Delegate to Connecticut Pomological Society in 1904.

WILLIAM H. SKILLMAN, ...R. F. D., Belle Mead, Somerset County.

Delegate to New York State Fruit Growers' Association in 1904.

WILLIAM H. MORGAN, ...Westmont, Camden County.

Delegates to Pennsylvania Horticultural Society in 1904.

ELIAS S. BLACK, ...Hightstown, Mercer County.
 WILLIAM H. REID, ...Tennent, Monmouth County.

Delegate to Peninsula Horticultural Society in 1904.

CHARLES BLACK, ...Hightstown, Mercer County.

List of Members of the New Jersey State Horticultural Society.

ATLANTIC COUNTY.

William A. Elvins, Hammonton.
Gerry Valentine, Hammonton.

BERGEN COUNTY.

E. S. Carman, River Edge.
Abram C. Holdrum, Westwood.

BURLINGTON COUNTY.

George Abbott, Moorestown.
Clayton L. Andrews, Moorestown.
John C. Beans, Moorestown.
Thomas J. Beans, Moorestown.
Charles D. Barton, Marlton.
Joseph Barton, Marlton.
William H. Brinton, Parry.
Henry I. Budd, Mount Holly.
Mark H. Buzby, Masonville.
Arthur J. Collins, Moorestown.
Charles Collins, Moorestown.
John S. Collins, Moorestown.
Samuel C. DeCou, Moorestown.
Howard F. DeCou, Moorestown.
N. P. Creeley, Burlington.
T. Lee Haines, Rancocas.
Albert Hansell, Rancocas.
Charles B. Hornor, Mount Holly.
George W. Jessup, Cinnaminson.
Benjamin Lippincott, Cinnaminson.
J. L. Lippincott, Riverton.
Charles Parry, Parry.
W. P. Pray, Kinkora.
Emmor Roberts, Fellowship.
Horace Roberts, Fellowship.
David Satterthwaite, Crosswicks.
Howard G. Taylor, Riverton.
William J. Terrell, Burlington.

CAMDEN COUNTY.

A. I. Driver, Kirkwood.
William H. Morgan, Collingswood.
J. O. Cuthbert, Haddonfield.

CUMBERLAND COUNTY.

Theodore F. D. Baker, Bridgeton.
Winfield S. Bonham, Shiloh.
Joseph Burt, Bridgeton.
Wellington Kimmel, North Vineland.
Alexander W. Pierson, Vineland.
John Wilcox, Vineland.

CAPE MAY COUNTY.

John B. Huffman, Cape May C. H.
F. Schmidt, Woodbine.
Mrs. E. S. Starr, Ocean View.
H. S. Hoffman, Cold Spring.

ESSEX COUNTY.

Cyrus B. Crane, Caldwell.
George DeCamp, Roseland.
W. W. DeCamp, Roseland.
F. C. Goble, Verona.
A. E. Hedden, Verona.
G. W. Gould, Box 101, Montclair.
Charles L. Jones, 8 Milford avenue, Newark.
Edward Quinn, } 22 Commerce St.,
John Quinn, } Newark.
P. T. Quinn, }
Dr. Joseph B. Ward, Lyons Farms.
J. C. Williams, Montclair.

GLOUCESTER COUNTY.

Albert Repp, Glassboro.
John Repp, Glassboro.
Theodore Brown, Swedesboro.
Wm. Gleason, Swedesboro.
Samuel S. Budd, Thorofare.

HUDSON COUNTY.

John A. Nugent, Court House, Jersey City.

HUNTERDON COUNTY.

B. R. Clifford, Delaware.
 Dr. I. S. Cramer, Sergeantsville.
 Mrs. Bessie D. Sked, Rocktown.
 F. J. Tomlinson, Pittstown P. O.

MORRIS COUNTY.

R. J. Bockover, Morristown.
 John S. Green, Morristown.

MERCER COUNTY.

C. A. Bennett, Robbinsville.
 Elias S. Black, Hightstown.
 Charles Black, Hightstown.
 Joseph E. Black, Hightstown.
 Lemuel Black, Hightstown.
 C. E. Blackwell, Titusville.
 Ira J. Blackwell, Titusville.
 L. L. Brewer, Titusville.
 J. F. Brown, Princeton.
 F. S. Conover, Princeton.
 Samuel S. DeCou, Trenton Junction.
 Franklin Dye, Trenton.
 Ralph Ege, Hopewell.
 I. W. Fleming, Titusville.
 Henry E. Hale, Princeton.
 Charles S. Lee, Hightstown.
 S. B. Ketcham, Pennington.
 J. W. Norton, Hightstown.
 Willard Perry, Wilburtha.
 Joseph C. Richardson, Trenton.
 Elijah L. Riley, E. Hamilton Ave.,
 Trenton.
 A. L. Roland, Princeton.
 Martin Ribsam, Trenton.
 E. C. Sharpe, White House Station,
 Trenton.
 Louis Strasburger, Princeton.
 Thomas Q. Taylor, Hamilton Square.
 John R. Thompson, Trenton.

MONMOUTH COUNTY.

William Adams, Milhurst.
 David Baird, Baird.
 John J. Beers, Keyport.
 J. B. Conover, Baird.
 Monro Corwin, Cranbury.

William B. Ellis, Freehold.
 J. L. Lovett, Little Silver.
 John Bodine Thompson, Heading-
 ton.
 E. T. Field, Red Bank.
 William H. Reid, Tennent.
 I. S. Robbins, Allentown.
 Forman S. Weedan, Tennent.
 D. A. Vanderveer, Freehold.
 S. F. Wooley, Allentown.

MIDDLESEX COUNTY.

James Neilson, New Brunswick.
 A. V. D. Polhemus, Franklin Park.
 George A. Shultz, Jamesburg.
 John S. Silver, Cranberry.
 Colfax Schuyler, South Amboy.
 Woodbridge Strong, New Brunswick.
 John M. White, New Brunswick.

OCEAN COUNTY.

C. M. Rorer, Cassville.

SOMERSET COUNTY.

Wm. Howard Gulick, Kingston.
 Arthur F. Randolph, South Bound
 Brook.
 Charles H. Servis, Skillman.
 Wm. H. Skillman, Belle Mead, R.
 F. D.
 C. Martin Wyckoff, Bedminster.

SUSSEX COUNTY.

Edward Ackerman, Houses.
 J. Frank Backster, Deckertown.
 C. A. Dalrymple, Branchville.
 W. H. Dalrymple, Branchville.
 Henry Folk, Sparta.
 Warren D. Haggerty, Deckertown.
 Samuel A. Miller, Deckertown.
 D. M. Roe, Branchville.
 John P. Wilson, Hamburg.

UNION COUNTY.

E. P. Beebe, Elizabeth.
 Hiram T. Jones, Elizabeth.
 R. Howell Tice.

NON-RESIDENT MEMBERS.

John S. Arndt, 903 N. 42d St., Philadelphia, Pa.
Henry Bischoff, 93 and 99 Nassau St., N. Y. City.
George C. Butz, State College, Pa.
H. W. Comfort, Falsington, Pa.
C. S. Davison, East Stroudsburg, Pa.
Prof. John Gifford, Cornell University, Ithaca, N. Y.
N. W. Heater, Waterbury, Conn.
J. A. Hepworth, Tonawanda, N. Y.
A. I. Loop, North East, Pa.
William H. Moon, Morrisville, Pa.
F. L. Mulford, Edgewood Park, Pa.
Walter Mulford, Edgewood Park, Pa.

HONORARY MEMBERS.

Mrs. Mary Treat, Vineland, N. J.

Dr. F. M. Hexamer, 52 Lafayette Place, New York City.
Dr. B. D. Halsted, New Brunswick, N. J.
William A. Manda, South Orange, N. J.
Prof. F. Lamson Scribner, Agricultural Dept., Washington, D. C.
Mrs. James M. Trimble, Montclair, N. J.
Mrs. E. Williams, Montclair, N. J.
Prof. John B. Smith, New Brunswick, N. J.
James Wood, Mt. Kisco, N. Y.
H. W. Collingwood, Editor *Rural New Yorker*.
Dr. E. B. Voorhees, New Brunswick.
John N. May, Summit, N. J.
Dr. Walter Van Fleet, Associate Editor *Rural New Yorker*.

List of Delegates.

Board of Visitors to the State Agricultural College.

H. L. SABSOVICH, ...Woodbine, N. J.
CYRUS B. CRANE, ...Caldwell, N. J.

Atlantic County Board of Agriculture.

HENRY PFEIFFER, ...Cologne, N. J.
J. E. HOLMAN (Alternate), ...Hammonton, N. J.

Burlington County Board of Agriculture.

ROBERT T. EVANS, ...Mount Laurel, N. J.

Camden County Board of Agriculture.

R. W. JOGGARD, ...Blackwood, N. J.
D. W. HORNER, ...Merchantville, N. J.

Cape May County Board of Agriculture.

H. S. HOFFMAN (two years), ...Cold Spring, N. J.
RICHARD LLOYD (one year), ...Dias Creek, N. J.

Gloucester County Board of Agriculture.

CHARLES TONKIN, ...Mullica Hill, N. J.

Hunterdon County Board of Agriculture.

F. J. TOMLINSON, ...Pittstown, N. J.

Monmouth County Board of Agriculture.

JACOB B. CONOVER, ...Englishtown, N. J.
WILLIAM H. REID, ...Tennent, N. J.

Union County Board of Agriculture.

GEORGE L. HEADLEY, ...Union, N. J.

Caldwell Grange.

MONRO CORWIN, ...Cranbury, N. J.

Hightstown Grange, No. 96, P. of H.

CHARLES S. LEE, ...Hightstown, N. J.

Locktown Grange, No. 88, P. of H.

MANNING F. SHERMAN, ...Locktown, N. J.

Mercer County Pomona Grange, No. 5.

MONRO CORWIN, ...Cranbury, N. J.

Peninsula Horticultural Society.

CHARLES WRIGHT, ...Seaford, Delaware.

W. F. ALLEN, ...Salisbury, Maryland.

By-Laws of the New Jersey State Horticultural Society.

As revised and adopted at the Thirteenth Annual Session, December 15th, 1887, at the time of incorporation, and amended at the Twenty-sixth Annual Session, January 3d, 1901.

ARTICLE I.

The officers of this Society shall consist of a President, Vice-President, Secretary, Treasurer and an Executive Committee of five members, who shall be elected by ballot at each annual meeting. The President, Secretary and Treasurer shall be members of the Executive Committee *ex officio*.

ARTICLE II.

Meetings shall be annually, or oftener, of which ten days' notice shall be given by the Secretary.

ARTICLE III.

Five members shall constitute a quorum of the Executive Committee for the transaction of business, and eleven shall constitute a quorum at any meeting of the Society.

ARTICLE IV.

Should a vacancy occur in any of the offices, the Executive Committee shall be empowered to fill the same till the next annual meeting.

ARTICLE V.

The President's duty shall be to preside at all meetings of the Society, and see that the By-Laws are enforced and a proper decorum observed by the members.

ARTICLE VI.

In the absence of the President the Vice-President shall preside and exercise all the authority of the President.

ARTICLE VII.

The Secretary shall give notice of all special and stated meetings of the Society, and of the Executive Committee (on conferring with the chairman), keep a record of the same, keep a roll of membership, attend to the correspondence of the Society, and perform such other duties as pertain to his office.

ARTICLE VIII.

The Treasurer shall have charge of all funds of the Society, keep a strict account of the same, and disburse them on the order of the Executive Committee.

ARTICLE IX.

Any person may become a member of the Society on payment of one dollar, and be entitled to all its privileges. Honorary and corresponding members may be enrolled by a two-thirds vote of those present at any regular meeting.

ARTICLE X.

At each annual meeting there shall be elected Standing Committees on Fruits, Flowers and Vegetables: that on Fruits to consist of five members, the others of three each, whose duties shall be to report from time to time such matters of interest as pertain to their several departments, including the exhibits at any meeting.

ARTICLE XI.

These By-Laws may be altered and amended at any annual meeting by a two-thirds vote of the members present.

MINUTES.

FIRST DAY—MORNING SESSION.

TRENTON, N. J., January 5, 1905.

The New Jersey State Horticultural Society opened its thirtieth annual session in the Branch Court Room at the State House promptly at 10:30 o'clock this day. It was called to order by President Skillman.

Prayer.

REV. DR. HUGH B. MACCAULEY, Trenton, N. J.

Almighty God, our Heavenly Father, our Creator, and our Preserver, we recognize Thee as the giver of every good and perfect gift, and we bless Thee for the circumstances under which we meet here this morning and for the purpose which calls us together.

We recognize Thy good hand which has been upon us during the year that is past, and all the gifts belonging to our physical and spiritual life which have come from Thy loving care. We have had our troubles and our sicknesses and we have had some losses and disappointments, but in spite of all these things, Thou hast brought us safely through them and Thou hast given us many more blessings and mercies and successes. So, our Father, we thank Thee to-day. Our hearts are glad in Thee, as we gather here for the official business of this Society.

We thank Thee for the harvest and for this wonderful display of choice fruits spread out here before our eyes. We have cared for these things; we have worked early and late; but above all our care and work is Thy gift, Thy power in the air

and in the soil, and in the curious chemistry of nature working with us as our good friend, without charge.

We pray that Thou wilt bless all the members of this Society now in session. Bless those that are absent from us, who are interested in the work, but are prevented from being present. Do Thou especially bless those that are gathered here, and as they consider the great matters that are connected with their success, with the growth, the production and the gathering of their fruits, with the destruction of the enemies that prey upon their fruits and fields, grant to quicken their minds and give them new ideas and new purpose and vigor to carry on the great work of agriculture in our state.

We pray Thee that Thou wilt bless the President of this Society and the various officers that are associated with him; the Board of Agriculture, its officers and all its work; and grant that as they go out to lead their brethren they may not only have their sympathy and confidence, but may also be led forward by Thy spirit, the spirit of progress, and the spirit of success.

Our Father, we pray Thee to bless the homes from which these members come. There, oh! God, is the choice vineyard of our love, our friendship and our life. We pray Thee to bless those great interests represented by the homes of the farmers of this State. We thank Thee for those homes. We thank Thee for the faithful wives and children who are in those homes and contribute so much to the success of their husbands and fathers. And we thank Thee for the peace of friendship, the love and the religion which abide in those homes. Protect them, we pray Thee. Put Thine arms about the loved ones there; keep them safe and well; cause them to grow up before Thee as plants in Thy kingdom and to bring forth the fruits of righteousness.

We pray Thee, as we think of these material things—the harvest, the crops, the fields—we may not forget that greater harvest in those greater fields to which these things point. Thou hast directed us to cultivate the vineyard of our soul. Thou hast called upon us to bring forth the fruits of righteousness. Thou hast warned us against the enemies of our conscience. Thou art the great husbandman. Help us. May we be men of conscience and men of God. As we plant our fields and work

our soil, may we think of God, our Friend and Savior, and in the vineyard of our soul may we be faithful.

Our Father, we pray Thee to give good success to this meeting and to these men, the farmers and workers in the great field of agriculture; and when they depart to their homes give them new hope for the year that is to come.

Pardon our sins, we pray Thee, in Thy love and mercy, and accept us, not because we are worthy, but for the sake of our Lord and Savior, Jesus Christ. Amen.

The President then called to the chair Vice-President Roberts, and delivered the following address:

President's Address.

W. H. SKILLMAN, Belle Mead, N. J.

A time-honored custom of this Society demands an address from its President at the opening of each annual meeting, and for me to omit it would be rank heresy. This custom has been faithfully and ably followed by my predecessors, whose addresses have bristled with good points and wise suggestions. But, so far as I have seen, few practical and beneficial results came from them. This is in no way due to lack of good or wise material to act upon, nor to any feeling of disrespect towards the writers, but to an indifference, an inertia, which has settled upon our society as a dense cloud and has already impaired its interest and usefulness and threatens to destroy its very existence.

The past year, with its joys and sorrows, its sunshine and shadows, is now a matter of history. Upon the whole, it has been a satisfactory one to the tiller of the soil. The cereal crops were good. The horticulturists too have cause to rejoice and feel thankful, for they have received a very liberal share of the goodness which freely fell from the hand of a bounteous giver. Most of our fruits gave us a good, or a fair crop. The season was favorable for the development of fruit, where proper cultivation and care were given. The past season has also been favorable for the progress of insect pests and fungous growths.

Orchards not properly sprayed showed a very large percentage of imperfect fruits. If you will pardon my characteristic, brusque way of expressing myself, I will point out a few matters for your consideration, which I do not claim to be either new or original, but none the less worthy of your attention.

The year just closed has furnished additional proof that fruit growing must be conducted by those who make a specialty of it; and why not? It is only they who will or can give it the intelligent attention it must have. The old, careless, neglectful way of growing fruit will soon be a matter of the past, for it can at this day only produce an inferior grade of fruit, which the consumers do not want. The neglected orchard is of little value to its owner and is a breeding place for pestiferous insects, and thus becomes a menace to the neighboring orchardist who is striving to check the ravages of insect pests. I would recommend to you the passage of stringent laws to compel the owners of fruit trees to use improved methods to stay the progress of injurious insects in their infested orchards. While some such law may now exist, it should be amended so as to make it the duty of someone to enforce it and make it operative. A man has no more right to harbor and breed injurious insects, which may spread to his neighbor's trees, than he has to keep any other kind of nuisance that tends to injure others.

We are offered a great deal of advice as to how to grow fruit. Some of it comes from those who have not learned the first elements of horticulture, but who are very fond of seeing their names in print and like to pass themselves off as knowing something. Much of it is from men who are not practical fruit growers, or who only grow it in homeopathic quantities, but would have us think they know it all. Some of the advice is downright rot, or of the character of the so-called Stringfellow, or Hitchings methods, which had better be well considered before being adopted, and then tried only in an experimental way or not at all.

One of the most important matters for fruit growers and horticultural societies to consider is how and where to sell our fruit. The distribution of our fruit deserves our best attention, for it is fully as important to dispose of our fruit advantageously as it

is to grow it. It is well known that markets in our great cities are at times congested with fruit. A few of the great centers are the dumping ground from everywhere. This should not be so. If our fruit were properly distributed, we would hear but little of over-production and glutted markets, and remunerative prices would be obtained. There are plenty to consume our fruit, and there is money to pay for it. There are hundreds of towns where fruit is almost unknown. Often there are small towns in our immediate vicinity where fruit is wanted and good prices can be obtained. I realize that the proper distribution of fruit is a hard problem to solve, but steady and intelligent work along proper lines would, in the near future, accomplish great results. I know of no subject deserving more careful attention.

Your attention is also called to the discrimination of our transportation companies in freight and express rates. It is grossly unjust to eastern horticulturists. The western fruit grower, with his fertile soil, and often cheap because of its location, can grow fruit more easily and cheaply than we can, and with the fine system of cut rates, rebates, etc., his fruits are put upon the market at a very much lower rate than ours, in proportion to distance. In other words, the rates on the short hauls are made excessive to balance the low rates caused by competition on the long hauls. It is not my desire to impose burdens on our brother fruit growers of the West, but simply to ask for justice for ourselves, who are compelled to grow fruit under much greater expense and difficulty.

One should bear in mind that most of the fruit from the great West is shipped by large companies, who reap the benefit of rebate and other hidden and indirect methods at our expense. The great man who is now at the head of this nation has advised Congress to so amend the inter-state commerce laws as to compel an equitable adjustment of transportation rates. It behooves this society to make the Congressmen and Senators of this state acquainted with the views and wishes of this society at once, as they may be called upon in the near future to vote upon the subject.

The most serious obstacle which confronts the fruit growers of the present day is the insect pest in general, and the San José

scale in particular. It appears that remedies so far discovered are only partially satisfactory, and cannot be depended upon under all circumstances. Some of the remedies have proven, under some conditions, to be injurious to the trees. What those conditions are I do not know, but I do know, by sad experience, that the vitality of the trees is sometimes injured by their use. I refer to the use of undiluted oils and fumigation, both of which have killed thousands of trees, and I believe have done more harm than good.

A law has been enacted in this State which compels the fumigation of all nursery stock sold. I do not for a moment question the honesty of purpose of this law, or impugn the motives of those who originated it. I recognize and appreciate the good work done in our behalf by our scientific men, but in their zealous efforts they sometimes reach wrong conclusions, and mistakes follow, and in this case a very serious one. I only condemn them for upholding this law after they know it may work injury. That fumigation does, under some circumstances, injure trees is unquestionable, and the author of the above-mentioned law has recently said, over his own signature, that "fumigation always weakens a tree to some extent." With such facts before you, how long will you tolerate such a law? I am willing to accord to others the rights (or wrongs) of fumigation, if they wish it, but I do decidedly object to its being made compulsory for those who do not want it. I urge you to give this subject your most careful attention, for it is indeed an important one. You should use your influence to repeal or amend this law.

The scarcity of labor has become a serious matter for us. Each year makes it more difficult to obtain. In some localities fruit goes to waste, because labor cannot be obtained to gather it in season. The scarcity of labor can easily be explained, but how to remedy it is not so easy. It seems that importation of laborers is the only way out of the difficulty. The fruit growers of the Pacific slope have employed large numbers of Chinamen for orchard work and find them very satisfactory workmen. They are apt to learn, industrious, temperate in their habits and never form unions or go on strikes. It is only by immigration that the labor problem can be solved. I can see no justice in a law which pro-

hibits the peaceable, industrious Chinaman from coming here, and, at the same time, allows the low, lazy and vicious of all other countries to come almost without restriction. The farmers of the East are crying for help, both indoors and out. The introduction of Chinamen will fill the need, but so long as labor unions can dictate legislation and prevent fair and just immigration laws so long will the labor question remain unsettled and the scarcity of labor exist.

As to the much-discussed bird question, I will only say that it is a matter of sentiment versus justice. The maudlin feeling and sentimental gush on the one side is arrayed against solid facts and justice on the other, and so far the former has won by subtle means and trickery, that would make an honest man blush with shame. A matter is never settled until it is settled right, and the agitation of this subject must continue. I believe it is one of the inherent, God-given rights of man to protect his property from destruction, and any statute law that conflicts therewith is contrary to his constitutional rights. I would like to see this society test this matter.

It would be well for us to consider the kind and size of package best for fruit growers to adopt. I believe a uniform sized and shaped package should be used. National legislation is probably the only way to obtain it. The package, whether barrel, box or basket, should be of uniform size, no matter where it is used. The buyer would then know he was getting the same quantity of fruit wherever it was grown. I am satisfied we at times suffer loss by coming in competition with different sized packages. What could be more fair or just than a standard sized package for all?

I ask you if it would not be well for us to consider the quality of fruit we grow and encourage the growing of better fruit and thus increase the demand. This society should encourage a higher standard of methods, not only in growing fruit, but in packing and marketing it as well. A package of poor fruit not only takes the place of a package of good, but it naturally lessens the demand. It is policy for us to increase the consumption of fruit by every means at our command, and we cannot do it by giving the consumer fruit of inferior quality. The time is near

at hand when an apple must have something besides a red coat to recommend it.

I would suggest to you a careful trial of the new remedy for the scale pest discovered by Prof. C. P. Close. It is a mixture of lime and kerosene oil. It is well known that the undiluted oils are all dangerous; therefore, this remedy should be used with care. I hope each member will give this new remedy a trial, as it is probably along the line of some of the oils that our best remedy will be found.

I would recommend to you the encouragement of a more friendly feeling and brotherly love with other horticultural societies. The closer we are in touch with them, the better for all concerned. We learn new ideas, new methods. It generates a kindly feeling, which tends to our mutual benefit. A unity of feeling and action is much more likely to secure the changes and benefits we want than if we work alone. Social intercourse will develop and broaden our better natures and increase good fellowship.

It has been suggested to me by one of our oldest and most respected members that a plot of ground be secured and a suitable building erected for the use of this Society. I think this idea a good one, and while we may not see our way clear at present to do this, I think it well to lay the matter before you for your consideration.

There are many other matters which deserve to be mentioned, but I feel that I have drawn out this document too long already. In conclusion, permit me to say that I realize there are many obstacles in the path of the fruit grower, and it will require his very best efforts to grow fruit at all. The clouds may appear to be dark and heavy, but it is not necessary to take a pessimistic view of the future, for there is a silver lining to it all. Fruit can and will be grown if we use proper care and attention and put forth our very best efforts. Then, and then only, can we trust in the God of the harvests to crown our work with success.

Mr. David Baird moved that the address be referred to the Committee on President's Address, to report before the adjournment of the present convention.

Vice-President Roberts appointed as members of the Committee on President's Address Messrs. E. P. Beebe of Elizabeth, H. E. Hale of Princeton and Elias S. Black of Hightstown.

Secretary Budd then called the roll of delegates. (Printed on pages 9 and 10.)

Secretary Budd then made his report as follows, which was received:

Secretary's Report.

H. I. BUDD, Mount Holly, N. J.

Brevity is the soul of wit. With no effort toward wit, I will make my report brief, because our Executive Committee has requested me to compress my review into the smallest possible space, in order that a greater portion of our limited time may be given to our committees and speakers.

During the year our Executive Committee held several sessions for the purpose of considering an exhibit at the St. Louis Exposition, revising the proceedings of the last meeting, and preparing plans and programs for this. The different committees will report the conditions and results of fruits, vegetables and flowers grown during the past year.

The revision of the fruit list has made no progress. It has been impossible to get the different members of the committee to take up the work. They seem to be very slow in recommending or endorsing varieties. Unless some extraordinary inducement is offered to the committee to enter into this revision there is little hope of accomplishing it, owing to the long time required and the different opinions about the varieties of fruits.

Although several of our states are planting apples and peaches in large numbers, covering thousands of acres, New Jersey has not during the past year expended much effort in this direction, being deterred largely by the depredations of the San José scale. This pest has been unusually successful in destroying groups of trees in apple orchards all over the state, and in discoloring the fruit of the Kieffer pear tree. To properly control the scale, and for other potent reasons, it will be necessary for our modern

fruit growers to change their method of tree training from the tall, broad, outspreading branches to the low, vase-shaped form, thus sacrificing beauty to necessity.

A fair measure of profit has attended the efforts of growers of early apples and other fruits, but the later varieties found dull and unprofitable markets. The late apple crop of this and other states was large and overloaded the market during gathering time, breaking prices. In order to make fruit and vegetable growing profitable in prolific years it is necessary that we should have a perfectly organized plan of co-operation for disposing of our products. The most feasible method thus far suggested is that of quickly distributing them over a wide area, instead of overloading and breaking down our home markets with more than they can digest, as was the practice during two months of the past year. Advanced methods are becoming absolutely necessary in order to prevent glutted markets. There are 50,000 distributing points for fruits in the United States, yet for the want of systematized method in shipping to them, millions of quarts of strawberries, millions of bushels of apples and thousands of baskets of peaches go to waste.

That our markets will be well supplied with apples in the future is shown by the statistics of trees planted and being planted. Missouri leads the van of states in apple trees planted in orchards. Her figures are a few thousand over 90,000,000, or six apple trees for every man, woman and child in the State. New York is second with 15,000,000 and over, and Illinois stands third, with more than 13,500,000 trees. Ohio is the fourth State, with 12,900,000. Kansas is fifth in the list of great apple tree States, counting 11,800,000. Pennsylvania carries 11,700,000 apple trees. There are nine other States whose apple tree enumerations run from 6,000,000 to 10,000,000 of apple trees in orchards. Even poor, old, piney North Carolina contains nearly 7,000,000 trees. One journal, speaking of this summary, says that when these trees come into full bearing it will take a fleet of large steamships to convey the apple product across the sea to our European neighbors. Nevertheless, New Jersey could compete with them all by principally confining its products to

early varieties and marketing them before the influx of the immense volume from other States.

As comparatively so few take an active interest in horticulture, I close with the following appeal:

The study of horticulture should enter into the life of every citizen. The district school houses should be located in beautiful parks. The grounds surrounding our State institutions should be extensive, in order that they may be beautified with all the skill of horticultural art. In our cemeteries the beauty of tree and vine, greensward and flower border should speak peace and comfort to the mourning ones. Our roads should be lined on either side with fine shade trees. Every farm should have its orchard, its berry patch, its lawn, its shade and ornamental trees and shrubs, its vines and flower borders. Our tables should be daily supplied with choice fruits and our houses decorated with flowers and plants. As a result, our boys and girls would grow to so love rural life that the hegira from country to city would, in a great measure, cease.

Treasurer's Report.

I. J. BLACKWELL, *Treasurer*, in account with the N. J. STATE HORTICULTURAL SOCIETY:

Dr.

1904.

Jan.	7.	Balance on hand, ...	\$697 64
		New members, ...	9 00
June	30.	State appropriation, ...	400 00
Aug.	20.	From State Board of Agriculture, ...	300 00
			\$1,406 64

Cr.

Jan.	7.	Samuel A. Miller, ...	\$6 50
		Entertainment of speakers, ...	10 00
	8.	Janitor State House, ...	5 00
	9.	F. C. Goble, ...	2 22
		W. H. Reid, ...	14 34
	19.	Prof. W. G. Johnson, ...	18 20
		Charles V. Kimball, stereopticon, ...	10 00
		William H. Morgan, ...	1 70
		Joseph Barton, ...	3 00
		B. J. Case, ...	21 90

Feb.	5.	New Jersey Mirror, printing, ...	\$7 75
		Frederick W. Gnichtel, stenographer,.....	90 00
		J. C. Williams, ...	2 25
		William H. Skillman, ...	9 82
	25.	Abram C. Holdrum, ...	6 75
March	2.	Abram C. Holdrum, ...	6 75
April	11.	William H. Reid, ...	12 92
		Executive Committee, expenses, ...	7 02
	15.	Dr. John B. Smith, ...	10 00
May	10.	New Jersey Mirror, ...	315 81
May	25.	Secretary's salary, ...	100 00
June	14.	Executive Committee, expenses, ...	2 10
	30.	United Express Company, ...	33 24
July	2.	C. C. Cowperthwait, postage, ...	11 00
Nov.	15.	Executive Committee, expenses, ...	12 73
Dec.	14.	C. C. Cowperthwait, postage, ...	8 00
		Treasurer, postage, ...	36

Fruit Premiums.

C. E. Blackwell, ...	3 50
L. Blackwell, ...	12 50
John Repp, ...	19 00
Joseph A. Little, ...	2 50
Samuel A. Miller, ...	4 00
William H. Morgan, ...	4 00
David Baird, ...	2 50
Horace Roberts, ...	1 50
William H. Skillman, ...	3 50
J. W. Updike, ...	1 00
Howard De Cou, ...	5 00
Charles B. Hornor, ...	1 00
Elva Skillman, ...	5 00
Treasurer, postage, ...	26
	\$794 62
Balance on hand, ...	612 02
	\$1,406 64

A motion made by Mr. David Baird was carried to the effect that the treasurer's report be referred to the Auditing Committee.

The President appointed as members of the Auditing Committee Messrs. Horace Roberts of Fellowship, and E. S. Black of Hightstown.

Report of the Fruit Committee.

CHARLES BLACK, Hightstown, N. J.

Mr. President—Your Committee again presents its annual report for 1904, and regrets that it is not more full and encouraging to the cause of horticulture in our state. We have had much the same disadvantages to contend with as in the past, and cannot say that 1904 has been a season of perfect success to the New Jersey Horticulturist.

The winter was unusually severe, the mercury sinking down many degrees below zero, doing much damage to the vines, fruit trees and buds. It injured, principally, small fruits, peach trees and buds in such a way as to cut the crop short in peaches and blackberries. Only the most hardy varieties and the most favorable situations gave us peaches and blackberries. There was here and there a full crop of peaches, but mostly only a partial one. The past season has more fully demonstrated than ever before the importance of perfect air drainage for peach orchards. Orchards protected on the north and west by woodland or other means were generally a failure. The buds were nearly all killed, and, in some cases, the trees also, especially where they were weakened by scale or other causes, while those fully exposed to the wind and air gave partial, and, in some sections, a full crop. I have seen orchards lying south of woodland, where there was no perfect air drainage, with the buds all destroyed for a distance of 100 or 200 yards, but after this distance the buds began to increase as the elevation increased, until the upper side of the orchard, which was considerably higher and fully exposed to the wind, gave nearly a full crop of peaches. The whole distance of the orchard was less than 400 yards.

Orchards on strong clay or gravel sub-soils, as a rule, resisted the cold best. Many young trees on loose, sandy or gravelly soil were killed outright by the roots freezing too hard. The tops were uninjured, but the roots were killed. Out of a fine, two-years-old orchard of 800 trees I took over 100 that were apparently all right before the leaf came out. I give these facts to im-

press the importance, in planting the peach, of selecting as high and as fully-exposed situations as possible, so that when we encounter a season like the past we will be more sure of success, as a crop in such seasons is much more valuable than when there is a general supply.

Peaches were variable, but largely a failure. Monmouth county reports 25 per cent. Mercer county about 25 per cent. The crop was unequally divided, some counties having all, others none. C. A. Bennett, at Newtown, from an orchard of about 500 six-years-old trees, gathered 3,000 half-bushel baskets, which sold in local markets for about \$2,200. The varieties were Greensboro, Mount Rose, Champion, Stump, Elberta, Crawford Late and Fox Seedling, all of which gave a full crop, except the Crawford Late, which gave about one-half crop. If the fruit had been thinned on many of the trees, the results would have been better. Morris & Co., near Yardville, also had a full crop on a six-years-old orchard. Reports from Cumberland county say they had a full crop of most varieties. Sussex, Warren and Somerset report nearly a failure. The crop was very light in Hunterdon. The winter of 1903 to 1904 and the San José scale caused immense damage to peach orchards. This should not discourage any from planting young orchards who have suitable soil and situations, as the scale can be kept down if it is looked after before getting too well established. After peach trees get pretty well incrustated they have lost their vitality and usefulness.

The crop of Kieffer pears was pretty generally a full one, but largely of poor quality on older trees. The rust was not as prevalent, but the fruit was generally inferior in size. The heavy storms of September took off a large quantity, but left too many for our market, which was well supplied with cheap apples. I think more Kieffers went to waste than ever before. Some who picked early and were fortunate in making early contracts realized fair returns, but many who did not do so either sold at extremely low rates or let them waste. Young orchards that gave fine fruit and were properly handled gave fair returns. The time has come when it will not pay to let old orchards of Kieffer pears encumber the ground, if it has any value for other purposes. I have grubbed out my old trees and am dehorning others that

are fifteen to eighteen years old and have borne heavy crops in the past. I shall cut away all the top, leaving the main branches from four to six feet long, with a small amount of small twigs on them. They will soon form a new top of young wood, from which I hope to get a few crops of good fruit. If I am disappointed I shall take them out and plant young orchards. I still believe there is a profit in growing first-class Kieffers, but it is financial folly to grow a big crop of poor fruit. We undertake to care for it, and lose both the fruit and work bestowed upon it. The crop of other varieties of pears was only a partial one. Bartlett's, in some sections, were a fair crop of good quality, and those held until full grown sold well. Those who marketed before they were full size did not get so much as those who shipped later. Since California, largely, supplies our early markets with Bartlett's, it is not advisable to ship our Bartlett's until full sized, unless there is a full crop; then it is better to ship as soon as they are a fair size. There was, generally, very little blight among pears in 1904. LeConte has been selling at a fair price for several seasons. The past season it sold in New York market for \$2.25 and \$2.50 per barrel. It is more subject to blight than the Kieffer and does not fruit as early, but should always be planted in large blocks of Kieffers, say about 10 per cent., as it makes the Kieffers more productive. There were not as many Kieffers stored the past season as usual. Some common fruit sold out of storage at \$1.50 to \$1.75, leaving only a small margin, while I know of one car of choice fruit from young trees which sold for \$2.75 to \$3.00. It does not pay to store, unless the fruit is first class, put up in first-class order and as soon after picking as possible. There should not be more than a few days between picking and storing, if the fruit is expected to come out in good condition.

Apples.—The crop of early apples was fair and sold at fair prices in New York and Boston markets. There was much complaint and loss through the railroads failing to transport and to deliver the fruit in reasonable time. The crop of winter fruit was only a partial one, and much of it was blown off by the September gale. It is largely of Ben Davis and Smith's Cider, and so far can only be sold at low, unprofitable prices. Gloucester county reports a profitable crop of early fruit and plenty of winter

as far as grown. Sussex and Warren, a good crop of fine fruit, but prices low. In other sections the crop was uneven, and our city markets are full of first-class New York and Eastern apples, so that at present there is practically no demand for common fruits, which glut our local markets. The fruit is generally keeping good.

Plums.—The Japan varieties gave a heavy crop of generally very inferior fruit, which in our local and New York markets sold very low, often as low as 20 to 25 cents per bushel. The only favorable report received was from our worthy President, who reports a full crop of Red June and Wickson, which sold from 65 cents to \$1 per half bushel basket. With a few exceptions of small lots of choice fruit, this is the only instance of a profitable crop I have heard. Japan plums are like Kieffer pears; grow good fruit or none at all for profit.

Strawberries.—Generally the crop was short, owing to drought. The prices were fair, and those who had good crops did well. Varieties are so sectional that it is difficult to give a list of reliable ones. A report from Vineland recommends New York as doing well the past season. With the excessive crops grown all around us, New Jersey's future as to profitable strawberry culture is not bright. Formerly we could get fair prices for our earliest and latest fruits, but Maryland and Delaware are ahead and New York State with its fine fruit a little behind us. We do not have any time when we have the market to ourselves.

The crop of blackberries was very light from all reports received. The winter injured most varieties so much that they gave very little fruit. Eldorado and Ward came through in pretty good shape, but as they have not been planted very largely the crop is not large. There is sufficient quantity of the Ward in condition to fruit the coming season to give a pretty thorough test. The growth was very satisfactory the past season. Plants set in the spring of 1903 gave a good crop of fruit in many cases. The Ward should be planted on light or medium soil, as it makes too much wood growth on rich, heavy soil. The old Wilson was a perfect failure in all sections reported.

Raspberries gave a fair crop, especially the Black Caps. One member from Burlington reports a fair and profitable crop,

largely of Cuthberts. The Welch is largely grown in some sections of Burlington county and is earlier and more satisfactory than the Cuthbert. It is also better color. The Miller is one of the best in color and texture for market, but the quality is very poor and it requires a rich, loamy or sandy soil, not doing well on heavy clay. The Early King is very satisfactory with me on rich, heavy soil. It is early, a good color and flavor, and can be picked as soon as red. Some object to its tendency to drop when ripe, but I find this an advantage, as when it gets ripe enough to drop it is too ripe for market. The growing of red raspberries has been one of the most profitable of the small fruits for several years past, especially for local markets. We have found the city of Trenton one of the very best markets for choice red raspberries.

Grapes did well in many sections. The rot did some damage in Mercer county. Other sections, especially Cumberland, were free from it.

The crop of currants and gooseberries where grown was a profitable one, although the scale has injured and discouraged currant culture.

The cherry crop was generally fair. Many of the sweet cherries were lost by rot. About all of the fine early cherries were lost by the robins. Very few of the fine sweet cherries are being planted on account of the birds' depredations. We must either have means of keeping the hordes of robins in check or go without the fine class of sweet cherries. Both cannot exist together, or the cherry can not. The robin does very well with plenty of cherries.

Scale and Spraying.—There was much interest manifested in and much more spraying done last winter and spring than ever before. Largely lime, salt and sulphur were used, but, I regret to say, often with very unsatisfactory results. In my section there were many instances where it did no good, and the scale increased rapidly. One member from Gloucester county, John Repp, who has probably had more experience in fighting scale than any other grower in the State, reports failure with the mixture and success with crude oil. He says he shall depend on the oil in the future. Heretofore I have found the lime, salt and

sulphur reliable, but from some cause, I think climatic, it was not a success generally the last season, especially where done late in February and early in March. Where it was done later it seemed more effective. The later it can be done, the more effective, I think, from past experience. We shall try it again.

CHAS. BLACK,
JOHN REPP,
S. C. DE COU,
A. E. HEDDIN,
WM. H. MORGAN,
Committee.

A Member—I think we ought to congratulate the Fruit Committee on their report. It is the best report of that committee we have ever had. I move that it be received and the thanks of the Society be extended to the committee.

President Skillman—In reference to my fruit, the price refers to the Wicksons and not Red Junes.

A motion was carried that the report be received and thanks be extended to the committee.

Report of Flower Committee.

E. P. BEEBE, Elizabeth, N. J.

I depended upon our chairman as far as I was concerned for that report. On January 4th I had a letter from him stating he would not be here and would not make any report. So I have prepared a short one.

The winter of 1903-4 was remarkable in the destruction of hardy flowering plants and their blossoms. In my locality, Union county, the California privet hedges were killed to the snow line for the first time since they have been planted as hedges. *Spirea lanceolata* was also killed; *Forsythia* lost its blooming buds, and other early flowering plants, as well as many kinds of hardy roses, suffered the loss of what wood remained above the snow line. Some were killed entirely, others made a

weak growth when spring came, lessening their production of bloom and their attractiveness on the lawns and in the gardens. In particular we would mention the loss of *Clematis Jackmanii* and other large flowering kinds, as well as climbing roses.

Peach trees were killed outright in some localities, and at other places the buds on peaches and cherries suffered severely.

Herbaceous plants came through nicely. Crocus, tulips and hyacinths gave us their welcome cheer and helped us to forget the long, cold winter; daffodils, narcissus, iris and pansies were in evidence until roses in May and June made us forget our other losses and appreciate our present blessings.

The productions of the florist have now reached a higher state of perfection than those of any previous record in America, and the people in general are buying these gems of art whenever Nature is "off crop." We cannot name the acres of glass in this State devoted to the growing of Easter flowers, to say nothing of the importations from across the ocean. The gems of art, the wonders of the world, are the offerings for Easter. The rich and the poor must have the Easter flowers, and some day, we, as Americans, may rival the Old World in their production.

Style has much to do in making the price of the floral offering. The American Beauties, with stems from two to three feet long, bring more money than the same flowers with one-foot stems; the Liberty rose could not compete because it would not, under the best of care, produce the long stem. Years ago the camelia was the leading flower, its clear, waxy, shell-like appearance and long keeping quality are admired to-day; but it is not in style for want of a long stem.

There was a short crop of hardy outdoor roses. The new climbing roses, Philadelphia and Baby Rambler, were put on the trial list, and the latter, in a small way, forced into bloom for Christmas.

Chrysanthemums seem to hold their own, and were the leading flowers for Thanksgiving decoration.

The coming forcing rose seems to be the tea rose, Richmond.

Moved and carried, that the report be referred to the Executive Committee.

Report of Vegetable Committee.

HOWARD G. TAYLOR, Riverton, N. J.

As your representative on the Vegetable Committee, I feel that I have little to offer to take up time that can be used more profitably. It is hard to know just what is required of this committee. It would be better to have its duties more clearly defined, or drop it from the list. I suppose originally it was appointed to take note of new varieties of vegetables that were deemed worthy of notice, but thus far nothing has been brought to the attention of your committee, although a prominent authority on vegetables was requested to give us the benefit of anything new or of interest during the past season. One person sees so little, it hardly seems worth while to continue these reports, unless the members, generally, take enough interest in them to make them what they should be. If they would forward notes (to the Secretary, or to the Chairman), giving items of interest, either on varieties or on experiments tried in improving present methods of culture, they might be made of great use.

The early pea crop, grown between tomatoes, cantaloupes, melons, corn, etc., as much to protect them as for the profit in the crop itself, was of little value, prices ruling so low the greater part of the season. The pea vine louse, however, was not so destructive as in some previous years.

Early cabbage was badly infested in some sections with the root maggot, so that it seemed as if the whole crop would be lost. As only the very earliest heads are profitable, growers need to use every precaution to prevent its ravages. Lime freely dusted on the plants seemed to drive the maggots from a small patch under my own observation. Onions, also, were nearly destroyed in gardens near the ground occupied the previous year.

White potatoes yielded well, but the prices were lower than the year before. Large growers, who make a specialty of this crop, are using the bordeaux mixture to ward off the damage from blight, which, nevertheless, shortens the crop very materially.

Each year the growing of sweet potatoes seems more variable and uncertain on the light soils along the river north of Camden.

I have no data from the large growers south of that point. Various remedies have been tried to overcome the fungous troubles that attack this crop, but with no sure result. Sulphur was tried in a small way for several years, but the effect was not good enough to warrant its general use. Even where the rotation brings them into the same field but once in four or five years, the disease remains. The past two seasons being so wet may have added to the growth of these diseases. Some years we feel sure that commercial fertilizers will be our salvation, only to find the next summer that stable manure gives us potatoes just as bright, or even brighter and freer from disease. One of our most respected members, now well past the allotted three score years and ten, told me recently there was a time when he thought he knew how to grow sweet potatoes, but he had reached the decision that now they grew just as they pleased, in spite of all that he could do.

Sugar corn holds its own as an important crop on our sandy soils, larger quantities each year being sent to the northern markets and good prices being received for the early shipments. The past season was a poor one for those who failed to get their corn in early, as the prices were very low when the bulk of the crop was ready and the quality at its best. Some fields were used only for feeding stock. The market is injured nearly every year by those farmers who plant large areas of white corn that can be used either for market or for cutting into their silos, if it is not salable. The consumer, who is not able to distinguish the genuine sugar corn from the hard white corn, gets disgusted and stops buying the fresh corn and goes back to the canned product, and that at a time when the true sugar corn, in its varied kinds, should be at its best.

We are still looking for a good, solid, early tomato that will combine all the good qualities of hardness, productiveness, good shape, size and color. The Earliana has a good proportion of these qualities, but is apt to be too small to fill the baskets as we wish. The crop last season was not large, neither was it very profitable, as the markets were overstocked much of the time.

Complaints were very frequent of poor sets of fruit and lots of leaf-blight. Bordeaux mixture has been used by a few growers,

but it is far from being in common use. It would be of much benefit to us if we could have the results of those who have used it. If this crop also must be sprayed in addition to our fruit trees, melon vines, etc., it looks as if labor would get more than its due share of the receipts.

Lima beans are getting to be another uncertainty. Even after we have grown the vines, we do not feel at all certain whether we will harvest a crop, as so many blossoms and tiny pods drop prematurely. Some of us have tried to overcome this by leaving only one plant to a pole and trimming that one, but with only partial success. It would be interesting to know whether plantings on a hillside, where there was good air drainage, have in this respect fared any better than ours on the flat river lands. I have been unable to try it myself, as our farm is not high enough above the river. Dreer's Improved seems a very popular variety in the markets, but some of us do not get crop enough to pay. We prefer the older, flat-podded variety. That yields much better with our treatment and also shells well, if proper care is taken in selecting the seed.

Early peppers seem to have reached an overstocked market, if one may judge from the amount of ungathered fruit at the close of summer. It has been a very popular crop for shipping to Newark and Jersey City for several years. Twenty-five years ago we used to grow them for the late Philadelphia markets, but gave it up when we could only sell a small part of the crop, and there was a very limited demand for them at that time before cold weather. When picked our plan was to cover them just before frost with corn stalks, and they would keep nicely for weeks in these piles.

Some large crops of egg plants were gathered the past season from small plantings. Many farmers have given them up, because they fail to get good, healthy growth. With many of us they begin to die as soon as set in the fields and keep dying through the season. This vegetable can be so easily shipped that low prices are the rule for it.

Moved and carried that the report be received and referred to the Executive Committee.

Mr. Munro Corwin—I understood you to say that Bordeaux mixture was used for blight, and further to remark that it threatened the yield.

Mr. Taylor—I said that although the Bordeaux mixture is used, blight still threatens the crop very materially.

Mr. Munro Corwin—In my section it is used and it is quite an important question whether the Bordeaux lessens the yield or the blight. The Bordeaux has no bad effect on the yield.

Mr. Taylor—I haven't heard anything about that, but the blight gets in its work just the same.

Mr. Munro Corwin—You mean, then, that the Bordeaux has no effect?

Mr. Taylor—Not entirely.

Mr. Vanderveer—The Bordeaux has been used near Freehold and they had a large increase in yield, because it keeps the vines healthy.

Mr. Corwin—I had understood from the government report that Bordeaux was a very effective remedy for blight and had increased the crop, so when I understood Mr. Taylor to say that it was not effective, I was surprised.

Mr. Black—It occurs to me that if our Society expects to continue these vegetable reports the committee should have more members. It has only two, and if one of those cannot render any service it all falls on one. I would suggest that the membership of that committee be made four or five, instead of two, the same as our Fruit Committee.

President Skillman—That is probably a good suggestion. Our friend Mr. Blackwell will have something to say on that, although not a member of the committee.

Mr. Blackwell—I wish to call attention to the Manistee potato as an acquisition to the early potatoes. It is one of the largest and most productive. As far as I know it is the best early potato.

A Member—Is it a sweet or an Irish potato?

Mr. Blackwell—An Irish potato. It just came out last year or two years ago. It is sent by a New York State man and is said to be one of the new early potatoes. I am willing to recommend it. The crop was something over 200 bushels per acre. In regard to lima beans, I would recommend Henderson's Dwarf,

and also Dreer's. They are very productive. Henderson's Dwarf comes at least two weeks earlier than any of the pole limas that I know of, lasts with us all the season, and is quite an acquisition because of its earliness. It is small and I prefer it. We have them in our neighborhood.

Mr. Black—My experience with dwarf limas, especially with Henderson's, is that it will bear enough, but is no good for market. If we can get a good strain of Early Jersey or King of the Garden that will yield from four to five beans in a pod, that is the very best. The Dreer has always been pretty productive with me, and this past season it gave more than the large flat lines.

A Member—Mr. Blackwell, do you plant that early potato with other varieties?

Mr. Blackwell—We have it with the Early Rose.

A Member—How did it compare as to season?

Mr. Blackwell—About the same time.

A Member—How did the yield compare?

Mr. Blackwell—Two to one.

A Member—Double the Rose?

Mr. Blackwell—Yes.

A Member—What is the color of the potato?

Mr. Blackwell—White.

A Member—Round?

Mr. Blackwell—Yes. The seed can be obtained from Charles Ford, Fishers P. O., New York.

Mr. J. S. Collins—In regard to lima beans, I believe that Bordeaux mixture, or a very fine lime mixture with powdered blue stone will greatly increase the yield. In 1893 we planted a row of lima beans across the garden and they did not pay at all. Last year we planted a row across the garden, and we blew on them the dust of fine lime with powdered blue stone, and possibly a little sulphur, and there were plenty of beans the whole season. This failure that has been spoken of with regard to potatoes and the use of Bordeaux, I imagine was because it was not applied in time. From experience in New York State it was found by a thorough use of Bordeaux it would make the profit in some cases of \$50 to \$100 per acre. But it must be done before the spores of the disease get in. It is a preventive, not a cure. I believe

there are many of our crops that the Bordeaux (if put on either with water or dust) will benefit.

The motion to receive the report of the Vegetable Committee and refer it to the Executive Committee was carried.

Report of Special Fruit and Flower Committee.

DR. JOSEPH B. WARD, Chairman.

Nothing has been called to my attention during the past year, either in the way of new fruits or flowers.

Mr. Blackwell reports among the apples that are not generally planted is the Barnerly, a medium-sized white apple that keeps till into March with ordinary cellar care. The quality is very fine and it is a productive, thrifty tree, a fine grower for the amateur or retail fruit grower.

The Ward blackberry gave the past season a good yield of fine large berries of good quality. Briars continue to send up strong shoots, but very few of them, but branches more than most blackberry plants.

Red Cross currant shows good quality and not so acid as most all the older varieties.

The Howard strawberry is very productive, good size and color, ripens early and continues late; the best single variety that I know about, five days later than Michael, and ending with Gandy. Perfect flowers.

Ham with me not worth a description—bisexual.

Hazel, a right good berry; worth further trial.

I have six new berries grown by Hon. J. Warren Fleming. Among them is No. 2, nearly as large as President, and early as Howard. I believe these to be six as good strawberries as are grown in this section. They want a couple of years' trial yet.

Nettie is among the older berries. We have to compare all berries with it for productiveness. So far as I know it is the latest, hardiest and most productive strawberry, with Reba a close second, and all ripened as the Nettie commenced to ripen. Both are imperfect flowers. So far as I know a few plants can be had next summer of Mr. Fleming's new berries. He has

raised a good many seedling strawberries. In all probability he will contribute these new productions to the horticultural world.

Dr. Ward—This is a very short report, but I think most of the introducers of new fruit are afraid to put the fruit in the hands of this committee, or they are afraid to let them know that they have it. As soon as we knew about the Ward blackberry, we were asked to visit this plantation. The committee went to the ground and we had a very good exhibit of the Ward blackberry, and so it should be with other new fruit. As I said before, the New Jersey Horticultural Society is ready to examine all new fruit, and judge it on its merits. We want nothing in the way of frauds, and we don't want to send out any fraudulent attempts.

Mr. Monro Corwin—Is the Howard strawberry five days earlier or later than the Michael?

Dr. Ward—Five days later, I believe; that is right, Mr. Blackwell?

Mr. Blackwell—Yes.

Dr. Ward—I happened to be in Trenton last summer during the strawberry season, and at the lunch table I was introduced to a gentleman. He asked me if I had time to go around to his store and see some of the fine berries he had—the President strawberry. I went and saw a number of crates of fine berries. I asked him what he was getting for them. He said twenty-five cents per quart. As I stood there, there were probably a dozen or fifteen of those quarts sold, and I think I was not there more than three or five minutes. They were sent from the originator, Mr. Hunt. They certainly were fine berries and were bringing the price. If we can grow strawberries and sell them for twenty-five cents a quart, there is lots of money in them.

Mr. Dye—It shows that a good article will sell.

Mr. Hansell—I would ask Dr. Ward if he ever saw the Stevens berry?

Dr. Ward—No; I do not know it at all.

Mr. Hansell—It originated somewhere near Bridgeton. I set a thousand plants near Fairton.

It was then moved and carried that the report be referred to the Executive Committee. Motion seconded and carried.

Report of Legislative Committee.

DR. J. B. WARD, Lyons Farms, N. J.

Mr. President: I spent a good deal of time and thought in trying to make out the report of this Legislative Committee, and the deeper I get into the thing, the more I am perplexed. I finally concluded to give a verbal report. Mr. Ketcham is here. I know he is much better at this than I am, and will come to my assistance. I will say:

The Legislative Committee organized directly after the Society adjourned and drafted a very conservative bill, as they thought, on the robin question. It was one of the hardest things to get a man to introduce that bill in the Legislature. We went to five or six members and there was not one who would father it. Finally Mr. De Cou, of this county, very kindly offered to introduce it. After the bill had been printed and introduced the ornithologists of the State met to discuss this bill with the committee. They came down really to fight the bill. The gentlemen present were Professor Chapman, of the Natural History Museum of New York, who lives in this State; A. C. Murchison, of Plainfield, and Mr. Dutcher, of New York; Professor Scott, of Princeton University, and Mr. Black, one of our own members. We went over the bill, and they wanted to have the thing defeated entirely, but after a good deal of discussion we amended it. They agreed, so that the horticulturists and the ornithologists came together. The objectionable features of the bill, as they thought, were stricken out. The provision was that persons who were aggrieved by birds destroying fruit could apply to the game warden for permission that would enable them to shoot the bird or birds. The bill was amended with that feature added, so it seemed to be a very conservative bill. It was acceptable to this Society, or to your committee, and also seemed to be acceptable to the ornithologists of the State. The bill was defeated, as you all know, with the majority very strong against it. I think it was lost by a vote of 46 to 8. I do not know what measure we shall adopt, but I believe that under the present status with the mem-

bers, the press, public sentiment and almost the entire State against us, it will not be possible to obtain a bill to shoot the robins.

Mr. Charles Black—I was one of the Legislative Committee that met the gentlemen. With the exception of Professor Scott, of Princeton, they acknowledged that our demand was just, that there should be something done for the horticulturists. Professor Scott took a decided stand against it, and said if we fruit growers had any means of protecting our fruit from the robins without killing them he would be with us. "But," he said, "I am here for only one purpose to-day, and that is to protect the robin." Several of us talked to him so much that he left. I told Professor Chapman and the rest of the bird men that if Professor Scott maintained his position there was no use in trying to do anything with them. They said: "He is a little too hot-headed, but we will get him in," and they did. He met the committee and we decided on the bill that Dr. Ward has just stated was very conservative in every way. It was presented to the committee and was reported favorably, but we have not done anything. Outside of Mercer county, I think there was nothing done. I communicated with our members and every one of the members of Mercer county voted for it, but outside of that very little was done. Scovel, of Camden, and Swackhammer, of Somerset, thought to gain public sentiment, so secured a long petition from the school children and ladies and men, who didn't understand the subject at all, and that completely swamped the Legislature. But the matter is not dropped. We must have some protection, and whatever the fruit men can do in a proper way I think will be done. We must make the members of the Legislature understand in one way or another that petitions from school children and people ignorant of the subject cannot destroy our business.

Mr. Baird—I think this question will come up anew when the Committee on the President's Address reports.

President Skillman—We also have a gentleman to read a paper on the very point, and I would suggest that we drop this question at present, because it will come up later.

Dr. Ward—The popular opinion is against the thing. We have eleven members in the Legislature from Essex, and most of those men were personal friends of mine. I went to them and tried to get one to introduce the bill. He laughed and said: "Doctor, I would do almost anything for you, but I would not touch that with a ten-foot pole. It would kill me." I finally wanted them to vote for it, and they refused.

Mr. Baird—It is unpopular and the people have to be educated,

Moved and carried that the report be accepted and referred to the Executive Committee.

President Skillman—I wish to suggest that a committee be appointed to look after the visiting delegates who are here from Delaware and other places. I assure you when we visit their societies they take good care of us.

The motion being made and carried, the President appointed Messrs. Baird and Hale as a committee to look after the visiting delegates.

Mr. Hale—Every year we ask a minister to come here to open our convention with prayer. We take much of his time and give him nothing. I would suggest that we present him with some of this fruit.

This suggestion was acted upon.

On motion the meeting adjourned until 1:30 p. m.

FIRST DAY—AFTERNOON SESSION.

President Skillman—We will take up the questions in the box.

First Question—What time of the year is considered best to set strawberries?

Mr. Charles Black—When they are grown largely for market, as early in the spring as possible, that is, as soon as the soil is in proper condition. The earlier we set them, the better they grow. In some sections, if they are for fall planting, they are planted in August.

Second Question—What is the comparative value of the following remedies for the San José scale: Con-Sol, Frutolia, Kill-o-scale, Webcide, Kerosene, Limoid mixture?

Mr. Charles Black—I experimented somewhat with this new mixture of Kerosene and Limoid. I sent Professor Smith a sample last week of the twig that was sprayed. It was not done very thoroughly, and he reported favorably. There were very few live scales left and the reason was probably due to the imperfect application.

President Skillman—Have you had any experience with Con-Sol?

Mr. Black—No.

Professor Smith—Those questions will be answered in my paper.

Third Question—Shall we fumigate nursery stock?

Professor Smith—It depends altogether upon whether it requires fumigation. There is no reason why it should be fumigated if the stock is clean. Fumigation never helps anything so far as improving the quality of the stock. But whenever nursery stock is infested by any insect that can be killed by fumigation, by all means fumigate.

Mr. Baird—Does the fumigation injure the stock?

Professor Smith—Fumigation, unless it is carefully done, is likely to injure nursery stock. Fumigation is like all other applications made to plants, it must be done with the knowledge of what one is doing in order to obtain good results, without injury to the plants. But it is quite possible to fumigate nursery stock of most kinds without injuring it.

Mr. Charles Black—I think the time has come that if there is any doubt whatever of infection by the San José scale we cannot afford to plant trees that have not been properly fumigated. Every good thing has its fault, and if you over-fumigate you kill the tree. But I have never seen any very unsatisfactory results from proper fumigation.

President Skillman—As I understand it, Mr. Black means that proper fumigation is the kind of fumigation that does not injure the trees.

Fourth Question—It is said that the top of a tree and its roots are alike; that is, if the top sprawls, the roots sprawl. Now, in case an upright grower is planted and grown for some years and then grafted or budded, do the roots grown after that time grow more sprawling and does the top grow more upright than it would if not worked on an upright grower?

President Skillman—I suppose the intent of that question is something like this, if the tree has habits of growth are those habits changed?

Mr. Charles Black—By working on other stock?

President Skillman—Yes.

Mr. Charles Black—Not in the main. If a willowy-growing apple tree, like the Roman Beauty or Roman Stem, be grafted on an upright grower, like the Northern Spy, or a late apple, it still retains that habit. There are a great many of the weaker growers that are influenced by grafting on a vigorous top. That is, they are made more vigorous, but their habits are not changed from upright to spreading trees.

President Skillman—Do I understand that the stock does not change the habits of growth by a bud or graft put upon them?

Mr. Charles Black—No; no more than that it makes them more vigorous.

Fifth Question—Why is it that peaches grown in California and brought here have so little good flavor?

Mr. Denise—I will simply say that they have the same flavor here that they have in California. There is no difference.

Mr. Baird—It seems to me that statement of Mr. Denise can be questioned.

Mr. Denise—Any statement can be questioned.

Mr. Baird—Because the flavor of the peaches grown in South California is not the same as those that are grown here.

Mr. Denise—I did not say it was. I said the California peaches have the same flavor here that they have in California.

Mr. Martin—I think I can take exception to that statement in another way; those peaches are picked too green. I think if you take our peaches and pick them as green as that, they would not be any better.

Mr. Denise—Only a little over a year ago I ate peaches there and they tasted the same as they do here.

Mr. Bennett—If that is the case, why do Georgia peaches have a better flavor?

Mr. Monro Corwin—The Georgia peach is grown on clay soil, and the California peach is raised through irrigation. Excessive moisture in the irrigated peach reduces the flavor. I never ate a good peach from California in my life.

Mr. Charles Black—As far as irrigation is concerned, the more water there is in the soil the less flavor the fruit has. In a rainy season here our peaches are not as good flavored as they are when it is more dry. The less moisture there is, the higher the flavor of the fruit.

Sixth Question—What is the best variety of plum trees to pollenize the Wickson?

Mr. Charles Black—I think our President ought to be able to answer that question, as he has grown more Wicksons than anyone else.

President Skillman—In my opinion, they need pollenizing, and I would recommend the Climax, October Purple, or the Red June.

Seventh Question—Some plums are called prunes. Why? In other words, what is the difference between a plum and a prune?

Mr. Charles Black—A class of plums called prunes seem to be a different class from the ordinary plums. We have a class of apples that are called Pippins, but I think the term Pippin merely means the apple. But in the plum or the prune there is a distinct characteristic from the ordinary plum. There are no prunes in the Japan varieties; they are all in the European. All prunes are usually freestone, and are only fit for drying. There must be a distinction in the two classes.

Eighth Question—With what, and when should peach and plum trees be sprayed to prevent decay of the fruit on the trees?

Mr. Baird—Won't you give us your experience, Mr. President?

President Skillman—We will hear what the others have to say upon it.

Mr. Charles Black—I never had much faith in spraying to prevent rot in peaches or plums. If one applies Bordeaux mixture of sufficient strength to have any effect on the plums it destroys the leaf. It seems to be unable to stand the Bordeaux when it is of proper strength to have any effect on the rot. We spray to keep down the rot. In rainy or bad weather my plums have always rotted.

Professor Smith—A large number of experiments have been under way in Georgia, partly by the State officials and partly by the United States Department of Agriculture, and up to the present time they have not found anything satisfactory.

President Skillman—I tried to stop the rotting of plums with Bordeaux mixture. I used it at different strengths, and did not succeed in doing anything except putting on one application that killed the foliage; but even that did not stop the rot. Both the European and the native rot for me.

Mr. Parker—In Georgia they gather up the mummied fruit.

Mr. Baird—I think that would be a good preventive—to pick the mummied fruit from the ground and then the fruit, so that one specimen does not touch the other.

President Skillman—As to my own experience in that line, the latter part of the gentleman's statement is good; but as to picking up the mummies, I think that does not amount to anything.

Mr. Collins—I think they do not belong to the same class, as far as the rot is concerned. There is no trouble to keep it from the peaches, but with plums spraying will not stop the rot.

Mr. Reid—About four or five years ago we made an experiment. We sprayed blue stone before the buds bursted, and after that three times with Bordeaux mixture. Our plums never rotted worse than that year. Last year we were told to cultivate our trees with a mowing machine. We have done that. You know what the weather was at picking time, and we had less rot this year than we ever had, and our trees were literally loaded. My idea is that with ground in a fairly high state of fertilization there will be less rot than by cultivation.

Ninth Question—Will stirring the sod around a peach tree, before blooming in the spring, cause it to bloom sooner than it

would otherwise do? If it will, would it not be better, in order to avoid late frosts, not to stir the soil until after the tree is in bloom?

Mr. Charles Black—There used to be an idea prevalent that it was unsafe to plough a peach orchard until after the danger of frost was passed; but our most progressive men now plough the orchard as soon as possible. I think the stirring of the soil is no disadvantage to the fruit buds. I think it will not make our trees bloom any sooner than if we did not plough it.

Tenth Question—What do you think of the Climax, the Apple and the Sultan plums?

Mr. Baird—The Climax is no improvement on some of the others.

President Skillman—Is it not very poor in quality for cooking?

Mr. Baird—Yes, it is poor. I have never eaten it cooked, but it is poor in quality.

President Skillman—What do you know of the Sultan?

Mr. Black—I should say the same of the Sultan.

President Skillman—In regard to the Apple plum, it is a facsimile of the Satsuma, only an improvement on it in every way. It is a much larger and better plum than the Satsuma, and with me a good bearer. I consider it at the head of the list for canning.

Eleventh Question—What is the best equipment to spray 500 peach trees with lime, sulphur and salt in one day?

Mr. Bennett—I would recommend a gas power sprayer.

Mr. Collins—I think that is not a fair question. It would be much more work to spray 500 trees of some size than of others. There is nothing definite about it, whether they are small or large.

President Skillman—Would you think it would be necessary to have a gas sprayer for so few trees?

Mr. Collins—If the trees were small the ordinary hand pump would do it in that time.

Mr. C. E. Blackwell—Are there any low variety of apples that can be more economically grown in place of the high growers?

President Skillman—Do I understand you to ask what varieties could be planted that would take the place of our tall, upright growing trees, so they may be sprayed more easily?

Mr. C. E. Blackwell—Yes.

President Skillman—Mr. Black can answer that.

Mr. Black—If dwarfs are wanted it would not be profitable to grow apples for market. If one desires to make his trees low-headed, he must head them low. One can take a Baldwin and keep it down, if trimmed correctly.

Mr. C. E. Blackwell—Sometimes they do not grow so high.

Twelfth Question—Is “pedigree” stock any better than any other? Is not the word “pedigree” a fake intended to deceive?

Mr. Charles Black—Our most practical growers have exposed it, as far as the pedigree business is concerned. It is only a means of getting more money.

President Skillman—Is there any such thing as a pedigreed plant or tree?

Mr. Black—I think not.

Mr. Baird—Every Baldwin tree is a pedigreed tree.

President Skillman—Will not that apply to every other tree?

Mr. Baird—So far as they are true to the name.

Mr. Black—The idea is if I have a Baldwin apple tree, and it succeeds better than the majority of other trees in the orchard, that if I keep on propagating from that tree I get better fruit. But I claim it is only the conditions that are suited better to that tree that makes it yield better, for if I propagate from that tree, and do not give the roots the same conditions, I do not get any better results.

President Skillman—We hear of pedigreed nuts and pedigreed strawberries. Are they any more than seedlings?

Mr. Black—No, sir.

Mr. Roberts—Professor Powell, of Washington, tells us that the best method of improving our trees is to take the best we have and plant them in a row in the orchard. If you go to that row they will vary—one tree will bear nice fruit and the next tree not as nice. Go to the tree that has the nicest fruit and take all the cuttings from that. That done again and again is the real meaning of pedigreed fruit. In the hands of a conscientious man there is no doubt that fruit can be improved, and the authorities at Washington tell us that is the best method of improving our fruit at this time.

Mr. Charles Black—There are no real facts to substantiate that thing at all. I do not deny that propagators of fruit should select their scions from the most productive trees; but I contend that Professor Powell or anybody else cannot fix that character or type merely by taking it from a tree when the conditions may differ, for unless we give the same conditions to the products of that tree we cannot have the same results.

President Skillman—This is a very important discussion, and we will perhaps bring it up later.

Music—Mrs. Carolyn Barber Biddle then sang "Going to Market." Miss Thomas played the accompaniment.

President Skillman—We will now hear from Mr. Ellis Rudderow, of Moorestown, N. J., on "How to Raise Small Fruits at a Profit."

How to Raise Small Fruits at a Profit.

ELLIS H. RUDDEROW, Moorestown, N. J.

Mr. President and Members of the Horticultural Society:

If you had asked me what to raise for profit, I should say small fruits. But to tell just how to do it is a very different thing. I fear you will be disappointed if you expect me to tell old, experienced growers how to do it, as I have been raising small fruits only for seven years.

I should say the first essential is suitable and well-prepared ground, and plants set as early in April as possible.

My land is a clay loam. We usually cut-harrow the ground before plowing, which makes the furrow break better in the bottom, and the plow pulls much easier. Then we cut-harrow the ground again and sow from 500 to 800 pounds of fertilizers to the acre, and afterwards use the smoothing harrow.

I use the wide matted row system, making the rows five feet apart, and setting the plants two feet or two and one-half feet apart in the row, and then plant peas between.

We have two ways of setting the plants: One is by making the furrow with a disk-marker and setting the plants against the land



TREATY OAK, BOUND BROOK, N. J.

side. The other is by making small ridges and setting out with a trowel. By the latter plan the plants are apt to be two or three inches out of line, as one plant may be set on one side of the trowel and the next on the other, thus leaving about four or five inches in the row that cannot be harrowed.

After this keep them well cultivated with a small tooth-harrow, and hoe toward the land side. When runners begin to root, keep from two to three inches farther from the row each time, so as to bed the plants.

If you get enough plants before the growing season is over, stop cultivating until the last of October; then tear out the alleys, which will kill the plants. If this be done sooner, it will drag the plants around and make the beds too thick.

I begin to mulch about the middle of November, using about six tons of light horse manure to the acre for each foot of bed.

If berries are raised for a profit, they should be one's main crop, for they are then generally successful. But two acres on a 100 or 150-acre farm will be sure to be neglected, as there are more important crops.

Plant nothing but fancy varieties, and if these will not grow on your land, better not plant any. New kinds should be planted sparingly. Fifty plants are enough, unless you see them growing the first and second years.

It makes no difference as to quality if the berry be small. A berry must be large, red and firm, with a green calyx. The soft berry must be used soon after picked, or it will have a stale look. These the grocer will not pay much for the second time, and to his needs the grower must cater. The firm berry is the only berry large cities can have for Sundays, as no berries are picked on Saturdays.

It seems hard to decide which way to place the berries in the box to make them more attractive. Some place them with the stems up, but this hides the berries, and they have to be handled by the buyer to see them, which should be avoided. Turning the nose up, we must have extra perfect berries, or they will show white or knotty ends. If I were trying to make them look at their best, I should place them with the side up; that is, next to the sun. I would then have the largest way of the berry and the

brightest, reddest parts to show, with enough of the stems to garnish.

One should know something about the varieties' habits of ripening. If firm and durable for shipping when ripe, they should not be picked until then, for not only the quality is spoiled, but also a great many quarts to the acre are lost, as the last part of ripening the berry makes its most rapid growth.

I have heard growers complain of the Gandy Prize having a white nose, and being sour, and so they have unless they are thoroughly ripe. Mark a few berries when nearly ripe, and pick them 24 hours later, and note the difference in size and quality.

Taking the last three years together, I have picked from 49 acres of strawberries, old and new beds, 228,619 quarts, averaging $8\frac{1}{4}$ cents per quart, making \$18,886.55. Now, of these the Saunders and Lady Garrison averaged 6 cents and the Gandy Prize $9\frac{1}{4}$ cents. As you see, this makes a difference of $3\frac{1}{4}$ cents per quart. As they averaged 4,665 quarts to the acre, this makes a difference of \$151.61 to the acre. This would make a difference between all Gandy Prize and all Saunders or Lady Garrisons of \$7,428.89 on the 49 acres. This is where I claim the profit is, as it costs $4\frac{1}{3}$ cents per quart. The cost of raising an acre of strawberries, as near as I can figure, is \$201.67, leaving a net profit of \$183.19 and the net profit on peas \$32.66 per acre.

The raspberry needs different soil from the strawberry—good, well manured land, with porous subsoil, so as to dry early in the spring, as the root growth starts as soon as frost gets out thoroughly. If wet and cold in the bottom, the roots will naturally come to the surface, where it is dry and warm, and the sooner they come to the surface the sooner they freeze and die out. All plants should be dug out of a young patch to get good stand, as such plants have more fibre roots and less root gall. Taking a five-acre patch of raspberries for three years, I picked 104,206 pints at an average of four cents per pint, \$4,168.24. Cost of raising, marketing, picking, &c., was \$2,465.74, leaving a net profit of \$1,702.50.

I have eight acres of blackberries—four acres of Wilson and four of Early Harvest—but I will not quote figures on them, as the profit runs the wrong way with me.

Strawberries.

Plants to acre, ...	5.378
Yield, quarts, per acre, ...	4,665
Average selling price, per quart, ...	\$0 08 $\frac{1}{4}$
Total receipts, per acre, ...	\$384 86
Cost of raising, etc., per acre, ...	\$73 56
Picking, per acre, ...	81 63
Commission, per acre, ...	38 48
Carting and packing, per acre, ...	8 00
Total cost, per acre, ...	201 67
Net profit, per acre, ...	\$183 19
Net profit for 49 acres, ...	\$8,976 31
Cost per quart to raise, ...	\$0 04 $\frac{1}{3}$
Selling price per quart, Gandy Prize, ...	09 $\frac{1}{4}$
Selling price per quart, Saunders, ...	06
Average price per quart, ...	08 $\frac{1}{4}$
Receipts for peas, ...	\$49 37
Cost of raising, per acre, ...	16 71
Net profit, ...	\$32 66

Raspberries.

Cost of raising five acres, three years, ...	\$400 00
Picking, five acres, three years, ...	1,563 09
Commission, ...	402 65
Packages, etc., ...	100 00
Total cost of five acres, three years, ...	\$2,465 74
Total yield, five acres, three years, pints, ...	104,206
Average price per pint, ...	\$0 04
Total receipts, ...	\$4,168 24
Total cost, ...	2,465 74
Net profit, ...	\$1,702 50

Mr. Roberts—I would like to ask Mr. Rudderow if he sprays these strawberries?

Mr. Rudderow—I never have.

A Member—In growing the peas in between the strawberries, is the object to profit on the peas or to benefit the strawberries by the fertilizing effect that the peas would have upon the land?

Mr. Rudderow—For both.

Mr. Beebe—How much did the raspberries cost a quart on the ground?

Mr. Rudderow—I did not figure that out.

Mr. Charles Black—Why do you plant five feet apart; do the plants cover the ground?

Mr. Rudderow—In strawberries?

Mr. Black—Yes.

Mr. Rudderow—I do not want them to cover the ground. I want about two feet that is not covered.

Mr. Black—Do they cover too much planted four feet apart?

Mr. Rudderow—They cover too much with five. I have to stop cultivating and tear them out. If I do not, the edge of the bed becomes so thick that they will not do anything. As soon as I get enough, I stop and then tear them out.

Mr. Black—How wide do you leave them in a row?

Mr. Rudderow—About three feet.

A Member—Do you make a business of selling plants?

Mr. Rudderow—No.

A Member—How close do you set them in the row?

Mr. Rudderow—Never go by any certain distance, but about two or three or four and one-half feet. If you are sure they will not be too thick, you can put them three feet, but if the weather be a little dry, they must be a little closer.

Mr. Josiah T. Allinson—How far do you like to have the plants apart?

Mr. Rudderow—Four to five inches apart.

Mr. Allinson—Do you hoe them in the row?

Mr. Rudderow—Yes.

Mr. Allinson—Do you use any special implements to do it?

Mr. Rudderow—A half-moon shaped hoe is the best thing.

A Member—Do you hoe them when they are in blossom?

Mr. Rudderow—Yes; they have to be cleaned, but it is almost impossible to pull out anything like jack-grass, or jack-weeds,

or some of those small vine grasses without pulling off the fruit buds.

A Member—Kellogg claims if you do any cultivating with the blossoms on, it causes the berries to be knotted.

Mr. Rudderow—Kellogg has a lot of water to turn on. We cannot compete with him.

A Member—Does that injure them?

Mr. Rudderow—They feed very close to the surface, but they must be kept clean, even if there be some rotting.

Mr. Charles Black—It is not advisable to work them after they bloom?

Mr. Rudderow—It should be done as soon as the wild plant comes up.

A Member—Is your soil heavy?

Mr. Rudderow—We have not much light land.

A Member—Can the Gandy be grown on light soil?

A Member—What is the difference between the Gandy Prize and the Gandy?

Mr. Rudderow—One man originated both kinds; one is the Gandy Prize, and the other is the Gandy Bell. One is earlier and the other later. The Gandy Bell is a very dark colored berry, almost black, too sour to make any use of them, although it is said the canners like them.

A Member—Do you use any nitrate of soda on your berries?

Mr. Rudderow—Yes, some, in an experimental way.

A Member—What is the result?

Mr. Rudderow—Darker foliage; that is all.

A Member—Are you ever troubled with white grub?

Mr. Rudderow—Yes.

A Member—What do you use for it?

Mr. Rudderow—Can't do anything that I know of. I have never had much bother with that, and the Gandy Prize is not apt to be as much bothered as some other kinds. The plants of some berries are sweet, and they like them better.

Mr. Charles Black—If you plant any variety on soil that is subject to the white grub, it will eat them up.

Mr. Rudderow—Yes; they will not starve, but if you have one row here and one there, the grub will pick out the one it likes best.

A Member—Have you ever had any experience with the Steven variety?

Mr. Rudderow—Yes.

A Member—What do you think of it?

Mr. Rudderow—I bought 2,000 two years ago this spring, and, of course, I wanted to see whether it was worth while to set them out. I went down to Thornton's to see them in the season there, and the berry was all they claimed for it in every way. It is a good seller and a good cropper, but it makes too many plants and most too much foliage, and there will be more berries spoiled in a thick bed with them than with anything else.

A Member—Were they as good as the Gandy?

Mr. Rudderow—Not much difference; they seemed to ripen more together than the Gandy.

Mr. Monro Corwin—You spoke of planting only fifty plants of the new variety, and planting them in rows opposite each other. What is the object of that?

Mr. Rudderow—One might see some new varieties that he wanted to plant another year. He could then plant pure by having the two rows opposite one another, and could give them attention. If all are planted in one row, and another kind in the next, they will get mixed.

A Member—How many acres of Stevens have you?

Mr. Rudderow—Five acres of Stevens.

President Skillman appointed the following as Nominating Committee:

Messrs. D. Aug. Vanderveer,
S. B. Ketcham,
David Baird,
William H. Reid,
William H. Morgan.

Music—Mrs. Carolyn Barber Biddle then sang "The Cows are in the Clover." Miss Thomas accompanied her on the piano.

President Skillman—The next on the programme is "Results of Year's Spraying," by Professor John B. Smith, State Entomologist.

Results of the Year's Spraying.

PROF. JOHN B. SMITH, New Brunswick, N. J.

It is one of the difficulties in dealing practically with injurious insects that the results of the work done cannot be definitely obtained for nearly a year afterward. It has also been our experience that years differ, and that we cannot always count upon obtaining the same results on the same trees with the same material applied in the same manner. It is fair to make recommendations as the result of a year's work; it is not certain that the results will be identical, although under ordinary circumstances there is a probability that they will be.

The first experiments made on the Atlantic Coast with the Californian lime and sulphur mixtures proved failures. The washes were properly made, they were properly applied by men who were familiar with the California way of doing things, and yet failure resulted. Some time afterward further experiments were made by other men, who had had no experience, and these applications were successful.

In 1902-03 applications of lime, salt and sulphur were made by many people on all kinds of trees and in all sorts of combinations. We had washes that were boiled; washes that were combined with soda; washes that were combined simply by the heat of the lime; washes in which flowers of sulphur were used; washes in which the ground sulphur was employed, and others in which a sulphide replaced the original sulphur. Almost everything proved successful. There was hardly an application that did not show good results, and there seemed a reasonable hope that we had at last found the real thing required to control the San José or Pernicious Scale. So certain were we of this that systematic efforts were made, covering a considerable area of territory, to clean out infested orchards; but the results, unfortunately, do not come up to our expectations, and in fact so far as New Jersey is concerned the failure was striking, on pear and apple trees particularly. Had it been a matter of a few men only, or a few trees, we might have charged it to imperfect mixtures, to lack of experience in making applications, or to

any one of a dozen other different things. Unfortunately failures were general—the same men that were successful in 1902-03 failed in 1903-04. They applied the same kinds of material, prepared it in much the same way and used it on the same or similar trees. In the latter part of the summer, I visited orchard after orchard where work had been done and everywhere found matters as bad or in a worse condition than they had been the year before. I think it is a fair statement to make that pear and apple orchards, which were treated with the lime, salt and sulphur wash during the winter of 1903-04 are, at the present time, as bad or in a worse condition than they have ever been. A remarkable feature is the fact that this same wash, which on apple and pear was so little successful, was on plum and peach fairly satisfactory. The good results of previous years were not entirely equaled; but I think there is no doubt but that peach and plum orchards treated during the winter of 1903-04, are, on the whole, in better condition than they were at any time previous. Just why this difference in effect should be, has not been satisfactorily explained. The composition of the material is of course the same, the scale is also the same. There seems to be no reason why the material should act differently on different kinds of trees.

In the case of the apple there is an explanation for the failure of the wash to reach the scales toward the tips. Apple twigs are hairy: that is, they have a coating of dense, fine hair, which extends out a little distance over the actual surface of the twigs. The scales set close to the surface and in this way are as much protected by the clothing as the twigs themselves. The tendency of those making the lime and sulphur wash has been rather in the direction of using an excess of lime and omitting the salt. The result was that a thick wash was obtained, which formed a coating over the hairs and which did not come into actual contact with the scales at all. This coating cracked off, or was washed off, or lost its effect without injury to the insects. On the older bark, which did not have this hairy covering, the wash in many cases did fairly good work. We therefore had the effect of apparently clean trees, which bore horribly scaly fruit. The natural tendency of the larval scales is to work out-

ward, and the young twigs and the forming fruit became badly infested quite early in the season.

Unfortunately the explanation which seems reasonable for the apple does not apply to pear. The pear is not protected in the same way as the apple by a hairy coating or covering. The material had every possible chance to stick and to come into direct contact with the scales. Why the scales were not killed on pear while they were killed on peach is one of those things that has so far escaped my powers of explanation.

It is well to say that in some other localities better results have been obtained. In New York State, for instance, I am told that the results of the winter work have been on the whole satisfactory. In Pennsylvania I know that they have not been so. I saw Pennsylvania orchards which had been thoroughly sprayed and in which the fruit was just as scaly as it was in any of the New Jersey orchards.

It is probably unfair to say that this wash has proved a failure. It is fair to say that it is not entirely reliable. There is no reason to believe that the failure of the last previous winter will be repeated; on the other hand, there is no certainty that the success of the winter of 1902-03 will be duplicated. To the peach grower and plum grower I say use the lime, salt and sulphur wash—do not use more lime than is necessary—use salt to help the wash and boil in all cases. So far as good results have been obtained they have been obtained by the material prepared in just the way that I have mentioned. If you get too much lime your wash is too thick*and tends to scale off. By adding salt you increase the sticking qualities, and you aid in the spreading power of the wash. It seems to get closer and to hold harder and that is the point to be aimed at. On plum trees do not make your application until after mid-winter. The trees are perhaps more sensitive to this wash than any other and even peach resists better than plum.

During the past summer a long series of experiments have been made with combinations of lime and sulphur to note the effect upon insects and upon foliage. The scales sometimes become so abundant in the latter part of the summer that it seems desirable

to check them so that the trees shall not be too badly infested when they go into the winter.

First of all I thought it advisable to see what some of the proprietary mixtures would do for us; so I tested the "Universal Insecticide and Scale Killer," "Salimene," and "Con-Sol."; all of them supposed to be more or less lime and sulphur combinations. Not one of them proved to be good for anything from the practical standpoint. They killed some scale, of course; but they did less than the ordinary good soap mixture would have done, and much less than the ordinary kerosene emulsion would have accomplished. "Con-Sol." and "Salimene," I notice, are yet advertised in the agricultural papers as effective remedies against the scale. It will be a mistake for any member of this Society to purchase either of these products, if he hopes to obtain any benefit from his application.

It was found possible to use the lime, sulphur and soda combination at half strength with tolerably good effect, although even this did not do as well as I had hoped. It did kill all larvæ and recent sets; but we found that the half-grown summer scales were quite as resistant to applications of this kind as are the winter forms, and that it takes just about so strong a mixture to produce any general good result. Half strength would be of absolutely no effect in winter, and full strength in summer would wipe every leaf from every tree.

Sulphide of potassium with and without lime were both used and both of them with good effect, but here, also, just as soon as we got a mixture that was strong enough to kill the insects satisfactorily, we began to lose foliage. On the whole, disappointment resulted from this sort of experiment. I had been in hopes that we could use the lime and sulphur effectively during the growing season, even at the risk of causing some slight injury.

I did not myself use the boiled mixture of lime and sulphur, but I have been informed by several who have used it that it was very satisfactory. They used it at winter strength, omitting the salt, and seemed to find that the lime and sulphur alone may be used at nearly winter strength without especial damage, except on the more tender kinds of leaves. As the result of all the work done,

I do not feel that it is possible to recommend either of the lime and sulphur combinations for summer use against the developing scales.

A material that was widely recommended during the winter of 1902-1903 was caustic soda. This is an old New Jersey application, or at least it has shared with caustic potash the honor of being the first of the remedial measures tried against the pernicious scale in this State. Almost every fruit grower knows the effect of this caustic mixture on fruit trees: the bark cleans up, the tree seems to take on new vigor, and the tree, the season following a washing of the trunk and larger branches, looks one hundred per cent. better; but I had seen trees so treated pretty well infested with scale, and I could not grow especially enthusiastic. Nevertheless I followed with interest the applications made by many growers who used the material at the rate of one pound in five gallons of water, or perhaps a little stronger. Just to supplement their work I used it myself, only I took two gallons of water for one and one-fourth pounds of soda. The usual results in the appearance of the tree followed, and somewhere about the middle of June I received glowing accounts of the beautiful appearance of the soda-treated trees. My own trees looked fairly well; but I noticed very shortly afterward, when the scale began to breed, that I had just about as many crawling larvæ on the trunks and branches that had been sprayed with the caustic as I had on any other trees on the place. I found afterward, on revisiting some of my horticultural friends in October, that their experience had been pretty nearly the same. Not in a single instance was there a really good result on any kind of a tree, although I have heard from some growers that they have derived an appreciable benefit. Used during the summer, the material proved fatal to plant life long before it had any effect upon the insects. It may not be fair perhaps to condemn any material after a single season of work; but, taking the history of the caustic soda as a whole and combining it with what I learned in other States that were visited by me during the summer, I do feel safe in saying to this assemblage: do not use caustic soda to kill scales on fruit trees. You may possibly be successful, but the chances are about one hundred to one against you.

It will hardly interest you to have me detail the various kinds of soaps that were tested during the summer. You will be interested, however, to learn that the practical result of all these experiments is that, except for the straight whale oil soap, with or without tobacco, nothing produced any satisfactory result at a reasonable cost. There are plenty of soaps on the market, and I would hardly like to say that none of them are good for anything; but I do say that for economical use, if soap is to be used at all, there is nothing better than the regular whale oil soap made by a reputable manufacturer.

There remains to be touched upon the oils. Kerosene and crude oil have both received rather a black eye in public estimation. There were too many people who had undoubtedly injured trees by using them. The successes that were scored failed to count, and growers were very properly afraid of a material that was admittedly dangerous, if they could get anything else that offered equally good results without the accompanying risk. And yet, about the only really satisfactory results that were obtained against the San José or pernicious scale on other than peach or plum trees were obtained by the use of crude oil. It was emphasized again that on pear especially the oil produced a beneficial effect that seems to be equal to the beneficial effect produced by the lime and sulphur mixtures on peach. Experience seems to indicate that on old pear trees remarkable effects may be obtained in cleaning up and in stimulating, and that there is practically no danger where anything like reasonable care is used in making the application. I will not repeat what I have previously told you concerning the quality of the oil, nor the manner in which the application should be made. I will add, however, that for best results the oil should be just a little warm. It is then much more fluid, it sprays much more readily, the same amount will cover a much larger area, and the effect upon the insects seems also to be greater. On pear trees, where the Californian washes seem to fail most completely, the crude petroleum seems to be most effective.

Kerosene has not been much used during the past few years. It seems to be coming into favor again, however, since it has been found that it might be combined with water mechanically, without the necessity of having a special pump, and without the work of

making a chemical emulsion. The emulsifying agent in this case, if the mixture can be called an emulsion, is a preparation of magnesium limestone called limoid. As Mr. Brown, of Delaware, is on the program, and will, as I understand it, speak on this subject, I need say nothing about the limoid and kerosene mixtures, except that they are worthy of a careful trial and offer a fair prospect of good results.

Upon looking the entire field over, analyzing the results obtained in New Jersey, comparing them with the reports thus far received from other States and analyzing these, we come to the conclusion that, after all, the most certain, the most effective and the most direct of all the contact insecticides that have been used against this pernicious scale are the petroleum oils. I will admit, if you like, the danger that exists in their use; but we have plenty of other tools that are dangerous, which we do not hesitate to employ after we have learned how to use them. We know that crude oil of the proper specific gravity, that is, 43 degrees Beaume, penetrates through or soaks under every scale that it touches and kills the insect beneath it. We know just how it does it and we see just how it acts. There is no chemical decomposition that must be evoked, there is no loss, there is no trouble in the application; provided only that your tree is dry, there is nothing that will prevent the action of the oil when once applied to the insect. Heretofore in order to spray the oil over a larger surface, and thereby to prevent injury to the tree, we have either put on the material combined with water in a mechanical mixture, or we have combined the oil with soap to form an emulsion. The emulsion has proved at least as dangerous to the trees as the pure oil. The combination pumps, unfortunately, do not act evenly, and sometimes upset all calculations by first spraying water, then oil, and so making the results bad from every standpoint. Chemists have been seeking, therefore, for some method of chemically treating the crude oil so that it will mix directly with water, and that method has been found at the present time. I have on the way now two twenty-gallon lots of oil treated by a process that makes it perfectly miscible with water. One lot is high grade Pennsylvania oil, the other lot is Texas heavy oil with an asphaltum base and considerable sulphur. Both will be tested during the current

winter, and I have great hopes of being able to report to you at the next meeting that we have at last a material that has all the effectiveness of crude oil with none of its dangers.

Experiments have been in progress during the past summer, and they began first in an attempt to get something that would kill mosquito wrigglers in water. I concluded that any oil that would dissolve in water to kill wrigglers might be dissolved in water to kill scales, and I tried it with excellent results. The "Kill-O-Scale" that is advertised at present in many of the horticultural and agricultural papers is a preparation of this kind. There are other things added, so the manufacturers say, but essentially it is a soluble petroleum. I tried that, reduced with twenty parts of water, during the latter part of the summer and early August on peach trees, and sprayed some 300 trees that were badly infested by scale. Some of the trees were sprayed twice, and on some of these there was some injury to foliage; but when the examinations were made late in October, there were very few live scales found on the trees that were sprayed once, and none at all on the trees that were sprayed twice. The "Kill-O-Scale" costs altogether too much, and I do not wish to recommend any one to use it; but it is, nevertheless, true that it is the only one of the summer mixtures that was used by me for which I can honestly say a good word. My results were obtained by using a five per cent. solution on active scales when breeding was yet going on. It is doubtful whether it would not require at least ten per cent. to secure good results during the winter. The cost of the material, F. O. B. at the place of shipment, is \$1.25 per gallon. This would make the cost between thirteen and fifteen cents in the orchard per gallon of sprayed mixture. I see no reason why an equally effective remedy cannot be prepared for half that cost, and that is the point toward which we are working at the present time. Unfortunately, I must close as I began, with the statement that it will take a year for us to determine how good or how bad an effect has been obtained.

Professor Smith—Just before leaving I received from Mr. Charles Black a number of twigs with a request that I examine them and report upon them. The examination was made, and the

notes were mailed to him, but, apparently, he did not receive them in time for this meeting, and they are probably at his house now. I will give this meeting the practical result of the examination made.

He sent three lots of twigs. The result of the examinations made is as follows:

Lot No. 1, several pear trees, marked "Sprayed November 30th with 'Con-Sol.'" Seven twigs were examined and 369 scales were tested; of these 122 were alive.

Lot No. 2, portions of three peach branches, marked "Caustic soda sprayed November 23d, twelve pounds to fifty gallons of water." Four twigs were examined, 156 scales were investigated, and 81 were certainly alive.

Lot No. 3, pear twigs, marked "Limoid and twenty per cent. kerosene, sprayed about November 1st." Two twigs were examined, 269 scales were investigated, and all of these were alive. Of the eleven five were on one twig in one place, and seemed as if they had been missed in the application.

While none of the applications was entirely effective, the third (that is, the limoid and kerosene) is by all odds the most effective of the three.

Mr. DeCou—What crude oil is most desirable, Texas or Pennsylvania?

Professor Smith—The Texas crude oil is quite different from the Pennsylvania, and contains a considerable amount of sulphur, and it has an asphalt basis instead of a vaseline basis. I would not advise anybody to use the Texas basis until we know more about it.

Mr. Reid—You said it should be applied slightly warmed; what is the best method of warming it?

Professor Smith—That only means that it should be kept in a room, or anywhere, where it would get the temperature of 50° or 60°; that is sufficient. I think possibly Elias Black can tell us something upon that score. I think they have tried it that way.

Mr. E. S. Black—We have a steamer where we warm our oil. We cover it, and put a hose on it, and apply the steam to it, and one gallon will cover as much space as two without being warmed. It will go twice as far. If I were going to spray a

pear orchard, I would use crude oil. It will not only kill the scale, but clean up the trees and put them in splendid condition.

A Member—How about an apple orchard?

Mr. E. S. Black—I will have to try lime, sulphur and salt until I find something better.

Mr. DeCou—Is this crude oil?

Mr. E. S. Black—This is crude oil; it is tested 43 degrees.

Professor Smith—It is probable that this oil the Standard Oil Company sells is insecticide oil. The Standard Oil Company may have a good many faults, but I have yet to find a sample of oil sold as insect oil that does not run up to the proper grade.

A Member—What kind of sprayer do you use?

Mr. E. S. Black—The finest spraying nozzle I can get. It does not make any difference what kind of a pump you have; that is immaterial. You want one that has sufficient pressure. The smaller the pump, the greater the amount of work required to run it. If you get a pump that is big enough to get pressure enough behind it so as to give a fine mist with this warm oil, I think you can apply it to cover a large surface, and it will be effective and with very little danger of injury to your trees.

A Member—What is the finest nozzle?

Mr. Black—I know of nothing finer than vermorell. This can be regulated by the size of the opening. Vermorell with a fine opening gives as nearly an ideal spray as anything.

A Member—Why do you prefer crude oil to refined?

Professor Smith—Because the crude oil has some constituents that the refined has not. It contains gasolene, which is more penetrating than anything else. One gets a better and faster effect. The crude oil also contains vaseline, and that makes a coating on the surface and remains there a long time, and gradually gets into the scale and kills the scale that was not killed by the light oil.

A Member—Does not the refined oil kill everything that it touches?

Professor Smith—No. The trouble is with all these oils, we want to put on just as light a coating as we can, and when a tree is very badly infested, we get quite a scurf. So that with

the application of kerosene it is not likely to be as effective on a badly infested tree as crude oil.

A Member—Do you think the oil would kill a tree when it does not run to the root? Do you think it will kill a tree, provided you keep it away from the root?

Professor Smith—Yes, if you get the oil on in sufficient quantities it will do that. That is where the weak point of the crude oil comes in, if used in excess. Vaseline, which is one of its advantages in one point of view, is one of the disadvantages in another. One thing happens, it is either taken up by the scale or the bark. The bark in some trees, as in pear trees, will take up the vaseline, and seems to be benefited by it. With other trees, the result of taking up the vaseline is that the scales are killed and the tree is more or less injured, depending on the amount of vaseline that remains there.

Mr. E. S. Black—Do you remember the trees that I showed you, where the oil was on the roots?

Professor Smith—Yes; you might put it on a second time and kill every tree you tried it on.

Mr. Collins—I tried some experiment that confirms what the Professor said. I tried Kill-o-scale, and some with double strength did not effect it. I tried some Con-Sol., with double strength, and also fine lime and kerosene, ten per cent., and there are very few scales left with a ten per cent. application. For a few days it stood in a warm room, in water. If it were in a cold place, I do not think it would be as well. That is our experience. We wanted to see in the fall something to use this winter. Lime, sulphur and salt did not seem to be effective in a great many cases. We wanted something, and I think we have it now with the fine lime application and the kerosene. It is not dear, not quite as dear as crude oil. If we can kill the scale with one-fifth the amount of kerosene and the lime, I shall not consider the cost, because I think it is worth something on the land. So it is virtually one-fifth the amount, provided it goes as far. It may not spread quite so much.

Professor Smith—It does not spread as far.

Mr. Collins—If it spreads half as far, then it is two and a half times cheaper.

Mr. Beebe—When does the scale hatch, and what can we use at the time of the coming out of the scales?

Professor Smith—The scale begins to breed in this State between the tenth and the fifteenth of June, depending upon the weather. If you have an early season you can generally count upon seeing the first larva on the trees about the tenth of June. If the season is a little backward it will be the fifteenth before you perceive any considerable number of larvæ, and from the experience that has been gained during the past season I should say that for use on trees at that time after the scale makes a start in growing, either this soluble oil, or kerosene and limoid should be used. That is, oil in some shape. I think, possibly, Mr. Brown will have something to say on that point. If I have understood correctly he has used this material practically and he can say what its effect is on the scale.

A Member—I understand Mr. Repp has used oil this past year. Mr. Black says he is afraid, and I want to ask Mr. Repp whether he has injured the trees.

Mr. Repp—I saw no bad result in using oil. I used it for five or six years and never injured the trees.

President Skillman—Have you used it upon anything but apple trees?

Mr. Repp—Apples and pears.

President Skillman—And it does not injure them?

Mr. Repp—No.

President Skillman—Do you use crude or refined oil?

Mr. Repp—Crude.

President Skillman—Professor, I would like to ask you a question. How do you account for the fact that we see good reports occasionally from men who have used the lime, sulphur and salt, and occasionally bad ones?

Professor Smith—I cannot account for it.

Mr. E. S. Black—I want to ask Mr. Collins if he uses limoid.

Mr. Collins—Yes, fine lime. I use very fine lime and it has some magnesia. It is called hydrated lime.

Mr. E. S. Black—It was not ordinary lime?

Mr. Collins—It was prepared lime. I do not know the preparation. Some water, I think, is used and then it is riddled out

through a mesh so as to get it very fine, to operate through the fine nozzle.

Mr. E. S. Black—This is specially prepared?

Mr. Collins—Yes, sir. In reference to the effect of the lime, sulphur and salt, in many cases it is the preparation. If it be boiled thoroughly and put on warm or hot, I think it would have a better effect than if put on in any other way.

Professor Smith—That, of course, is so without any question. I assume that in all these cases that the wash has been properly prepared. I think a great many horticulturists have made a mistake in trying to obtain sulphur too cheaply. There is sulphur and sulphur. There is flour of sulphur, that is a sub-lime which forms the basis upon which the formulæ are made up. There is also ground sulphur, and it makes the flour sulphur. That is simply lump sulphur ground up. That is good, if it is ground fine and if the mixture is boiled long enough to combine with the lime. Then there is another material that is sold as ground sulphur which is really the crude sulphur ground up, with all its impurities. That, of course, is sold rather more cheaply than the other material, but it contains a considerable percentage of lime, but is not the kind of material that has been recommended in making up these lime and sulphur washes. Perhaps it was a mistake that I did not speak of it before, but I am glad that it has come out, in order to caution the members of this Society against buying anything they do not know about, either ground or lump sulphur, or better still, flour sulphur.

A Member—Are you acquainted with that party who furnishes the real pure sulphur?

Professor Smith—You can get it from any reputable dealer in sulphur.

Mr. E. S. Black—We buy it and pay a big price for it.

Mr. Collins—I would suggest that the Professor give the rule for finding whether the sulphur is pure. I tried it.

Professor Smith—You had better give it.

Mr. Collins—Take some sulphur and put it on a hot iron and if it all burns up it is pure sulphur. I tried some a few days ago, and all of it burned. I think it is worth knowing.

President Skillman—I am unwilling to check this, because it is an important subject and we want all the light we can get. If there is nothing further on this subject at the present time we will hear from some gentleman from Delaware. Professor Smith will give us anything at his command.

Mr. Reid—Dr. Voorhees made a statement at Freehold in regard to an experiment he made in an orchard. He used lime, sulphur and salt and supervised the job himself and it was a failure.

Dr. Voorhees—I simply referred to an experiment, and I think it was referred to by Professor Smith, as he sent his own man to supervise it. When the material had been properly made and properly applied there were cases where it did not work. It was properly made and properly applied, and according to the inspection made by Professor Smith and his assistant during the summer, there were a large number of large scales still on the trees. I do not know whether the Professor referred to that.

Professor Smith—I did not, but that is the case.

Dr. Voorhees—There seems to be some thing other than the preparation of the material or the application on the trees. What the conditions were that prevented its action I do not know, but that is the fact.

President Skillman—Then we are to deduce from that, that it is not satisfactory under some conditions.

Dr. Voorhees—That is so.

On motion of Mr. Beebe a vote of thanks was extended to Professor Smith for his paper.

Mrs. Caroline Barber-Biddle then rendered a selection entitled "Song of Flowers." Miss Thomas accompanied her on the piano.

On motion of Mr. Hale a vote of thanks was extended to the ladies for the musical program furnished by them.

President Skillman—We have with us a gentleman from Delaware, who has had a great deal of experience in fruit growing, and one who has a great reputation, (and I think deserves it), of shipping the best fruit that goes out of Delaware. He will give us his experience. Mr. A. M. Brown, of Wyoming, Delaware, will speak on "Modern Methods of Spraying."

Modern Methods of Spraying.

A. M. BROWN, Wyoming, Delaware.

I do not ship the best fruit out of Delaware. I try to do so, but to say that I did would be saying a great deal too much. I desire to make a few apologies to-day before speaking on the subject assigned to me. The first is, I have not presumed on my own part to come up here and address such a progressive and intelligent-looking body of men and women upon the most important subject relating to horticulture. It was the fault of the President; he has such a winning way when he solicits a man to come, that he exacts a promise from him, and this he did from me. I did not even select the subject, but left that entirely with your Executive Committee.

When I received your Secretary's invitation to speak upon "Modern Methods of Spraying," I thought it would not be much trouble to speak on that subject, but a few days later, when I received the program, and saw the place that I was to occupy on it, if there is such a thing as a man feeling like thirty cents, I was that man. I know that one of the most persistent among all the able entomologists, in urging horticulturists to spray and to protect their fruit trees from insects and fungous diseases, is Dr. Smith, and you may know how I felt when I saw that I was to follow Dr. Smith. I feel the embarrassment particularly now, after the able way in which he has treated his subject this afternoon.

I have also been told that 70 per cent. of the members of the New Jersey Horticultural Society are nurserymen, so that I feel I am addressing a nurserymen's association instead of an horticultural association. We heard one of your people a few days ago give a very good talk in a neighboring State. You need not be ashamed to have him go out and talk in any of the States. He is a bright, active fellow, knows what he is talking about, and gave one of the best practical talks I ever heard. But he told some things about nurserymen that I hardly agree with, and I do not believe you do. He said you always know what you are get-

ting from nurserymen. He illustrated it in this way. He said there was a Jerseyman went over to Philadelphia with his best girl and took her to the theatre. Afterwards they went to a café, and when the waiter brought the bill of fare, the gentleman was very persistent with his friend, insisting that she make a choice of what she wanted. But the man was in terribly hot water. He had only his return ticket with him and twenty-five cents, hence was very anxious to know what she would order. This being a new experience for her, she selected quail on toast. He was badly embarrassed, but finally said, "Do you know what quail is?" She did not know. He said "Do you see those six people over there sitting at another table?"—(they had quail). "Why," he said, "quail is as big as a turkey; you cannot begin to eat it; why do you not take what I take, hash, and then you know what you are getting?" (Laughter.)

Friends, I have a very important subject to speak upon—one more intimately connected with horticulture than any other at the present time, because we evidently must spray or get out of the business. I may not be able to say anything new or interesting, but if I don't, please be charitable toward me, as the old lady was toward the minister. There was an old lady who never found any fault with anything the pastor had to say. That she always found something to commend was proverbial with this old lady. It is a beautiful virtue, but one too rarely found, to see people's virtues and pass by their faults. This lady was an exception. It so happened that an extremely poor minister came to the church. He did not say anything in his sermon that amounted to anything. When the services were concluded some one went to the old lady and asked her if she found anything to commend. "Oh," she said, "was it not a beautiful text?"

In treating this subject I want to speak first of the materials, second of the machinery, third of the application and fourth of the economy of time.

Purity of materials was touched on this afternoon in the discussion that followed Dr. Smith's paper. I am one who believes that where failures have occurred they often occur because the materials were, first, impure, and second because they were not properly mixed, and third because the application was not right.

I know there have been more failures with the lime, sulphur and salt in 1904 than in any year previous, yet we have, in the State of New Jersey, in the State of Delaware, all over Pennsylvania and New York and through the mountain fruit district of Western Pennsylvania, Maryland, Virginia and West Virginia abundance of evidence that the lime, sulphur and salt were just as effectual last year as they ever were. So, where a mistake has been made, or where the wash has not been effectual, I think it has been due very largely to the fact that the materials were not pure.

Our materials must be absolutely pure, if we want to be successful in spraying. It is one of the things to which we have paid too little attention. Too many fruit growers are in the habit of purchasing their materials from any cross-road vendor—a man that knows absolutely nothing about them, knows less about them and their purity than you do, and a man who is interested in only the profit he can make out of them. Consequently, we have had men take impure lime and sulphur and try to bring about a combination of sulphide of lime, which is the element necessary to kill the San José scale. We can easily ascertain whether the materials are pure. There never has been a time in the history or progress of American Horticulture when difficulties were so easily solved as at present. There never has been a time when there were so many educated students at hand to give us all the assistance we need. In the first place, Professor Smith says to buy your materials from a reliable chemical company. In the second place, how little effort would it require to take samples of them and send them to your Entomologist, or State Chemist? Nearly every State has a chemist, who will analyze the samples and tell you just exactly what you are using. When a chemist wants to do a certain thing and have a definite result he does not take any chances with his materials that he combines to bring about that result. He analyzes them. If he is to take two commodities to produce a third he analyzes the materials to know that they are absolutely pure, because he can not get the result unless they are pure. Hence, purity is an important matter.

There were some remarks made about sulphur. The only

difference I have been able to learn between the flowers of sulphur and the flour of sulphur is that the flowers of sulphur have more acid and it is supposed have an insecticide value. This is a mooted question, even among scientific men. Good flour of sulphur from ground sulphur will make a good lime, sulphur and salt wash and will cost less than flowers of sulphur. The quotations from one of the best chemical companies in the country were for flour of sulphur \$2.40 per hundred in barrels of 250 pounds, and flowers of sulphur, \$2.60 per 100 pounds, and then for a cheaper grade of sulphur in barrels, 175 pounds, at \$2.30.

We have often tried to dissolve bluestone, but could not do it. We had a lot of undissolved bluestone left. It must have been impure, because when dissolved pure there is not a bit of sediment. The London purple and the Paris green are drugs that are very difficult to get pure. Get them from reliable companies and have them analyzed. We now use arsenate of soda as an insecticide, and with all our large growers there is very little Paris green or London purple used. We are using arsenate of soda because it is cheaper. It can be made to combine with Bordeaux, and Paris green or London purple will not. They are only held in solution. Consequently, it is the thing to use and costs about half the money. One can make up a barrel and have it on hand all the time.

When mixing a material it must be attended to in detail, especially with the lime, sulphur and salt wash, for the troubles we have had are due more often to improper mixing than anything else. There have been several methods of boiling and mixing the lime, sulphur and salt wash. I have heard of people here in the State of New Jersey in 1904 that have mixed it cold, and with just as much success as boiling the mixture. We have had some good results in Western Pennsylvania. I have plenty of letters from some of the very best fruit growers testifying to that; but I would not advise a careless fruit grower to try to mix cold the sulphur, lime and salt. It must be done properly. There are just as many failures with the cooking. I was requested to come to a place about six or seven weeks ago where a party has a fine fruit farm of over 1,000 acres. He was to put the lime, sulphur and salt on 30,000 peach trees. They had two

caldrons of 500 gallons each to make 1,000 gallons of the mixture at a time. They put in the required amount of lime, sulphur and salt for 300 gallons, added enough water to cook it, and cooked it briskly perhaps 20 or 30 minutes. Then 100 gallons of water were added and cooked 25 minutes. They took 100 gallons of material out and put it in the spray tank and put in another 100 gallons of water to cook while the first hundred were being sprayed out. While the second hundred were sprayed out the last 100 gallons were cooking. I remarked to the gentleman who was running the place in such a systematic and scientific manner: "Did it ever occur to you that the lime, sulphur and salt from the first 100 gallons were just three times as strong as the last hundred you took out?" He said it did not, and did not see how it could be so. I told him the last hundred was only colored water and not lime, sulphur and salt; that he had cooked the strength out of this material and the first 100 gallons had more strength than the last hundred. Finally he admitted that probably he was wrong, and said that might account for the success he had last year with the lime, sulphur and salt. He put up a barrel and it was very effective, and then he put out a barrel and the scale seemed to thrive under it. This was the last barrel, and was not lime, sulphur and salt.

When intelligent men like this Cornell student are running large operations and do things like that, what can you expect from a horticulturist who has not had the same opportunity? We are making lots of mistakes, and failures are recorded against a wash that has done the good that the lime, sulphur and salt wash has. We must go back to the foundation and tell where the difficulty is. It is not in the wash, but is in the material, or the application, or the man.

We must be more careful in the way we do this thing in the future. The San José scales are here. So let us fight them and get right at the question. In making the Bordeaux mixture I do not make up the stock solution of the lime water, but I make the solution of the bluestone and dissolve it with hot water, having one gallon of water to take up two pounds of bluestone. If I want to make 50 gallons, I simply put in three gallons of the dissolved bluestone. I do the same with the lime, but I make

that up fresh every day for each day's use. The tendency of lime is to harden as it cools, and one cannot get good results from lime after it once hardens. With bluestone it makes no difference, as that can be dissolved and held.

I never pour the bluestone into the lime, but the lime into the bluestone. I never pour the two together, as I do not see any benefit from it. I have had good results with the use of Bordeaux, so I shall keep on my present method of mixing. In making the L. S. S. wash I generate the heat by slacking the lime, and I get about 90 per cent. more heat than I can with the artificial heat. We have a very large fruit grower, who last year mixed his lime, sulphur and salt cold, and continued the boiling by adding six pounds of caustic potash, two pounds at a time, until all had been added. I have used much potash in that connection, because the horticultural press speaks a great deal about it. But my experience is that caustic potash will precipitate lime. Now, Con-Sol., that Dr. Smith talked about, is a liquid, yet if caustic potash is put in it, it precipitates into a solid form. So I have felt that I have never had any good results in that way.

I have seen some very good lime, sulphur and salt washes made up by different parties, but I think the best wash was made by Dr. Funk, of Boyerstown. He is a very thorough and a very practical man, seventy years old, understands his business and does the work himself. He put fifteen gallons of water to boil in his cooker, and then added the required amount of lime; after this added the sulphur paste, previously made, and cooked the material twenty or thirty or forty or fifty minutes, until he procured a material that looked as red as beautiful canned tomatoes. When in that condition, he simply added enough boiling water to make the required amount of one hundred gallons. Then he ran that through two strainers and sprayed it out without a particle of agitation. There was not one particle of sediment left. We hear a good deal about putting on hot lime, sulphur and salt. We all know that it is not hot when it strikes the tree. One cannot throw it two feet in the air and have it strike the tree hot, and yet it may be hot enough to the hand. Lime will work nicely and smoothly when it is hot, and the cooler it gets the harder it will

work. When it gets into that condition it will stick to the surface of the tree, but the warmer it is the more it will spread.

Now, about the machinery. This is a very delicate question, particularly after what your President has said. I feel that I ought not to say a word, as I fear you will think I am talking for my own personal interest, but I am not. Of course you know there are two kinds of pumps—the hand pump and the power pump. In the hand pumps we have what is known as the handle pump and the lever pump. The lever is the more powerful. In the power pumps, we have the steam and gasoline power, the geared air-pressure power, the air pressure itself where the tanks are filled, and the gas sprayer in which the power is generated from carbonic acid gas.

In the first place, the plunger and the cylinders of all pumps want to be of the very best brass material, and they want all the leverage possible. This is very important. We began fifteen years ago and the pumps we had then we could not do a thing with to-day, as there is a vast improvement in those of to-day.

The pumps we have we think are nearly perfect. They are all built on the same general line, but there is one thing we must not lose sight of in the purchase of pumps, for it is important. To-day, to spray right, to do the work effectually, to save material so as to do it economically, we must throw a fog-like mist. Fifteen years ago we sprinkled our trees as we sprinkle the lawn. Why? Simply because the nozzle was a fine lawn sprinkler. We do not want to treat fruit trees in such a way. We must not drench them any more, but spray them, and to spray we must have a mist. In order to have that there must be constant power back of it. Not one fruit grower out of twenty has given that subject all the consideration it ought to have, and that accounts for a whole lot of the difficulty we have had to contend with, and the resulting failures.

Almost any of the hand pumps will do good work, but there is not a hand pump made and there is not a man yet born who will take a hand pump and generate the necessary pressure of fifty pounds, and maintain it for from one to five or ten hours in a week, or one day in a month. One can get a hundred pounds pressure in the hand pump, but the man does not live

who will maintain that. And then you are not there all the time, but have to employ men. Down in Delaware we have to employ negroes, who are very careless, and we must stand over them to tell them what to do. They are lazy and indifferent. The result is, they are spraying half of the time under thirty pounds pressure and dropping the water out of the nozzle. It is universally conceded we must have power to get mist. So I contend that the day of the hand pump has gone, just as much as the day of the old tread power and the shaker thresher. The farmer who would have a tread power on the farm to-day, instead of the best-equipped thresher, would be regarded as an old fogey. There are conditions when we should use the hand pump, and they are when a man cannot afford to invest in a steam power. But when a man has any considerable number of trees he wants power, not only because he gets an effectual spray, but also because he economizes time and saves material. A vendor of pumps the other day said he could throw 150 gallons of material through his style of pump in eighteen minutes. His hand pump would throw a hundred gallons, or two barrels, in a minute. He did not say, however, that he could spray fruit trees, and I did not want his kind. I want to buy at the present time a pump that will make a hundred gallons of material go as far as 200 gallons ordinarily would and put on in such a fine mist that it will cover the surface. Then I shall save material and time. The steam pump is impracticable, because of its weight and because of the amount of fuel required to run it in the orchard; hence, its non-use. The gasoline outfit is all right, and I think the Fairbanks, 1904 Model engine, the latest improved Gould triple pump, as powerful a spraying outfit as one can possibly get. You all understand how these engines generate their power. They have a gear fastened to the wheel of the wagon and a sprocket chain run to the pump, and the pressure is being pumped up when the team is moving, and when sufficient, do the spraying. If for any cause you stop and that pressure goes down, you have to simply drive up again. It is claimed this can be done from tree to tree. If you can, well enough, but if not, you have to go from place to place.

I want to say something about air pressure. If there be 100 pounds of air pressure there will be 100 pounds of power. In steam we get expansion, but it is exhausted at every stroke of the piston; hence, we must generate power constantly as it is being used. The same thing holds good in the gasoline. It takes forty pounds of power to run the engine and machinery. In the geared air pump, of course, that is not necessary. If the power be not there, drive on to get it. There is another air pressure concern on the market manufactured in Pennsylvania. It has two cylinders—a spray cylinder, or a large steel tank, and the cylinder that holds the air. This has a pump with a sixteen horse-power engine. The one cylinder is pumped full of air and the other cylinder will hold fifty gallons of material. Go into the orchard and there will be enough pressure to throw out the fifty gallons. There are two machines, so that one is being filled while the other is worked. This method has not been applied to anything larger than a fifty-gallon cylinder.

Now a word about the gas sprayer, simply to let you know how we get our power. I am not asking you to buy the machine. Liquid carbonic acid gas has a power of expanding seven times; that is, a hundred pounds will make seven hundred pounds of power. There is no machinery to run, and the full maximum of power is there until every bit is run out of the tank. You simply exhaust the material. Consequently you get the maximum power until all material in the tank is out.

Those are the different kinds of machines we have. So far as the valves, rods, nozzles, etc., are concerned, we usually get them to our liking, but we do not use the old style hose, nor the old style nozzle. Dr. Smith named, probably, the most popular one in America. We are using the Vermorell nozzle. The objection in running it is we often get caught on the limb. The Dewey and the Mystery avoid all that difficulty, but taken as a whole are not as good as the Vermorell nozzle. The Karet Clog is a pretty good nozzle, because it works upon the same principle. It can simply be struck against the limb and cleaned. There is no danger of catching it in the limbs. But so far as a fine nozzle or a coarse nozzle is concerned, there is more in the power back of

the material than there is in the nozzle. When we first used lime, sulphur and salt we used the Bordeaux nozzle entirely.

I have one word more to say before I leave this, and that is about straining the material before it goes into the tank. It is one of the most important points. There is nothing that is so annoying or unpleasant, or gives such sore hands, as to go and take off the nozzle cap and clean it. It is the worst part of the whole business, because your hand must be right in it. In order not to have this nozzle clog, simply strain the material. I strain twice all the material that goes into my tank. The Gas sprayer has a nozzle protector that strains everything going out into the discharge valve, so that the stuff is practically strained three times. Yet with all that we sometimes have the nozzle clogged, simply because the lint, and one thing and another, in the hose will give way and find its way into the nozzle and clog it. But that is a condition one cannot overcome. We are using Chicago electric hose, which will stand one hundred and fifty to two hundred pounds pressure to the inch, and will not very easily wear out. We have to use a strong hose, and like that kind very well. A great many farmers are using the armored hose; that is, hose protected by wire. They have to do that, being on the hillside. They use anywhere from thirty to fifty feet of hose, because they keep the wagon way over here, and have to carry the hose over rocks, across several rows of trees.

Now, the matter of application. I said before, we spray; we do not drench. The finer the mist, the better it will be. The whole tree must be covered. A tower on the wagon is needed, so one man can take the top of the tree and the other man spray from below to strike the lower limbs. That does not apply so much to oil as it does the other washes, as oil will spread. If you spray from a tower and from below, I don't see how any portion of the tree can be missed. When it comes to applying anything for scale, if you overlook any space, it is enough to reinfest the entire tree. Down our way we have scale in the shrubs and hedge fences, and on a number of different trees, maples, &c. I was very much pleased with Dr. Smith's examination, and why the scale was protected out on the ends of the limbs of the apple trees. It is because the scale gets on our fruits that we have

more trouble in late years. That will be the problem of the future—how to keep the scale off the fruit. I believe we can control the scale on the tree, but I am not sure we can on the fruit. The scale is in the hedge, where the English sparrow nests. He is flying from the hedge back and forth to the tree. During a summer season he carries these scales. The birds go out first on the tender limbs and fruit. Why do they? Because their bills enter the tender portion easier than the hard portion. Thus the scale gets on the fruit, and we have had some covered with it. I think I have controlled it pretty well with the exception of six apple trees, and I have not been able to control them with lime, sulphur and salt. I have used the K. L. mixture, and it was successful in killing the crawling scale, but there is a good bit to be learned about the K. L. mixture. Dr. Smith has told you how it was made and how limoid was used. It is manufactured by Charles Warner and Company, of Wilmington, and it analyzes 40 per cent. of magnesia. It is supposed magnesia and lime make a very good combination. Professor Close has since used it when it analyzed only $4\frac{1}{2}$ per cent., and with it found equally good results.

Mr. Collins just told me that he had used the K. L. a little this fall, and he found, when he was spraying out the last of it, it showed more oil on the trees than it did in the beginning. In the beginning it showed lime and at the end it showed the oil. I remarked that I supposed the difficulty was that there was not enough limoid put into it to take up the kerosene, but he thought not. Perhaps it did not get the proper emulsion. One pound of limoid is supposed to take up one quart of kerosene.

When you use the K. L. mixture it is only an insecticide after all; not a germicide. With lime, sulphur and salt you get the two things every time you use it. If you use petroleum it is only an insecticide, not a germicide, and is doubly expensive. It is, however, said to be a germicide on pear trees. I know an orchard on which the crude petroleum seemed to have that effect, and I know other orchards where it had just as bad an effect as it does on peach and plum trees.

I want to say something about the Kill-o-Scale. Dr. Smith said it was \$1.25 per gallon. I think it must have been reduced

since he had correspondence with the firm. I was there the other day and was quoted a single gallon at \$1 and five-gallon lots at 80c., and in larger quantities a discount on that, bringing it quite low. Now, just look at the difference in prices of these things. Men that are using 10,000 gallons are the men that must figure the quarter of a cent on the cost. The K. L. mixture will cost from one and three-quarters to two and one-quarter cents, up to three cents, per gallon, according to the strength needed. The oil costs two or three cents per gallon. Lime, sulphur and salt can be made at a cent and a quarter a gallon, and I think more lime, sulphur and salt will be used than anything else. I hope the results will not be so varying as they were the last season.

Just a word about economizing time. Time is everything. Our spraying operations take place when we need all our help, and we are pushed on every side with work, and the quicker we can get through with it the better. The first step necessary, then, is to procure all the needed materials ahead of time. One can spray more effectually if prepared. Then have the mixing and filling plants in such shape they can fill the tanks in the least possible time. Large growers elevate their tanks and let it come in by gravitation. We have people who have three-story buildings. They elevate their tanks, have a steam pump and elevate the water up there and the materials on the second floor, and finally it comes down by the turn of a valve to fill the tank. Mr. Bancroft is one of our progressive men and he fills his 150-gallon tank in three minutes by gravity. Dr. Funk fills his 150-gallon tank in two minutes by gravity. He simply has a larger pipe than Mr. Bancroft has. So most any of us can prepare ourselves by elevating our tanks. If we cannot do that we can get a pump that throws a hundred gallons a minute. The cost is very light.

Mr. President, I hope I have said something, at least, that will be of interest, if I have not said anything of profit, and I thank you all very kindly.

Vice-President Roberts—You have said a good deal, both of interest and profit, and I am sure there are some questions.

Mr. Monro Corwin—I want to ask you if the lime, sulphur and salt is a germicide, as well as an insecticide?

Mr. Brown—It is.

Mr. Reid—Would it not be better for the majority of people to boil this mixture, rather than depend on the lime itself to boil it? I think you said that had to be done in a very careful kind of manner and just in such and such a way.

Mr. Brown—Yes, I think so. I do not propose to boil a bit. I expect to use more this season than I have ever used. I can name right now a man in your State who does not propose to boil it and used it last year very successfully. At the same time, taken as a whole, the average horticulturist wants to boil the wash or continue to boil it. A very good way and a very cheap way would be to have a barrel or two right in the row. I don't believe in making lime, sulphur and salt in large quantities. I think the smaller the quantity, the better. It can be made in a single barrel. Take an ordinary sugar barrel, and your ordinary fence wire; put two hoops around it, and that sugar barrel will last pretty nearly as long as a whiskey barrel. There is something about lime, sulphur and salt that gets under the hoop of the barrel and it is pretty soon gone. This barrel can be set right along in the row. Have a steam engine hired at so much a day, and by attaching to the pipe of the whistle you can heat the water and start the boiling, make your lime, sulphur and salt wash and continue the boiling with the steam until you are satisfied with it. It is right there to control. Those barrels could be elevated, with a pipe and outlet valve under each, so when the wagon comes along they can be filled very rapidly. Such a plant can be put up without the outlay of very much money. It is just like a tower. My first tower I built at a cost of \$1.75 for lumber, and yet to-day I have a steel tower that cost \$15, simply because it looks nice. They are lighter, only weighing 100 pounds, and I have it fixed on hinges so that I can turn it right over.

Mr. E. S. Black—I want to ask if you have used the Niagara spray?

Mr. Brown—My only experience with that was about four

months. I exhibited and gave demonstrations for four weeks continuously. I have used it in my orchard and made, I think, ten demonstrations with it since. When the lime, sulphur and salt wash begins to run on the trees like water you cannot do anything with it. The best thing is to throw it away. When it goes on the trees and will not stick like a good coat of paint, it won't do.

A Member—I wish you would state briefly how you make the cold mixture without boiling.

Mr. Brown—I use the full strength formula in everything I do. When I make a barrel of Bordeaux I take six pounds of bluestone and four pounds lime. The difference between the cost of four and six in Bordeaux and four and four is so slight that it does not amount to much. I used the California formula, boiled at first, according to Professor Webb, who says it is all right, and he is pretty good authority. Since that I use it cold. I take 20 pounds of sulphur, two gallons of boiling water and pour it on and stir it until I make a sulphur paste. You can throw sulphur in the caldron when boiling and it will never dissolve. Boil it for an hour, and pick out the particles; break them and the sulphur is there. Everybody who has ever made lime, sulphur and salt knows that. It can be overcome. When I have prepared the sulphur paste I put 40 pounds of the best stone lime obtainable into the barrel in which I am going to make it. I pick over the lime carefully. If it is dark, I break it open, and if it runs dark through it I discard it, because it will not slack. If there are dark veins running through it, I throw it away. I use nothing but pure white lime, because I am generating heat and have no business to work any foreign articles in it. I have the lime analyzed by the State Chemist, and I am advised that is one of the things in modern spraying we ought to do. I turn the 12 gallons of boiling water on the lime—not warm water, as I tried to do the other day and made a failure. If you have the right kind, the paste cannot be turned into that quick enough, because it will be jumping ten feet high and cover you all up. After turning the paste in, I cover it up and stick an old pole in it to loosen it up. The lime must be thor-

oughly slacked. After cooking 20 or 25 minutes I fill up with warm water preferably to cool. A great many people use cold water. The last thing I put in is the salt, and I stir that and then strain it into my spraying tank. I have had no difficulty in the clogging of nozzles. I am as positive and confirmed in the efficiency of my method of mixing the wash as I have ever been positive or confirmed of anything with which I came in contact in this work. People can talk all they please; what I know, I know, and all the power of earth and heaven can't change me in that conviction.

Mr. Charles Black—Does it always dissolve all the sulphur?

Mr. Brown—Mostly so. I have not a great deal of trouble in that line.

Mr. Charles Black—I had trouble in getting it dissolved.

Mr. Brown—You may have had a poor quality of sulphur. It is very important about those things. I mix every barrel myself.

Mr. Reid—You said in your address that you used in the Peninsula arsenate of soda.

Mr. Brown—Yes.

Mr. Reid—What quantity of that do you use?

Mr. Brown—I use two quarts of it to 100 gallons of water, making it in this way: Use one pound of white arsenic and four pounds of sal-soda and one gallon of water; boil until dissolved. We make it by the barrel and cook it by steam. Then one quart of that would go into 50 gallons. One pound of white arsenic cost last Friday $1\frac{3}{4}$ cents a pound; four pounds of sal-soda cost $2\frac{1}{4}$ cents.

Mr. Reid—You use that in place of Paris green?

Mr. Brown—Yes.

Mr. Reid—For what?

Mr. Brown—Potatoes. We put it right in with our Bordeaux; it will mix with Bordeaux and stay with it. You do not have to agitate it at all. One pound of white arsenic, four pounds of sal-soda and one gallon of water.

Mr. Reid—That is sufficient for 200 gallons of material?

Mr. Brown—I said 400. I am a little mixed on that. I

think it is only 200. That is equivalent to one pound of Paris green. We boil one pound of white arsenic and four pounds of sal-soda in one gallon of water until it is dissolved, which will take from 10 to 15 minutes. With steam it can be done in eight minutes.

Professor Smith—What product do you have then when you have made that combination? Is it arsenate of soda?

Mr. Brown—Yes.

Professor Smith—If you put that on don't you burn the foliage?

Mr. Brown—Yes; certainly. I am very glad you spoke about that. I am not speaking of it alone as an insecticide. If you are using it all alone, just as you would Paris green, when you put this in the water you must put two pounds of lime to every fifty gallons. Is not that so, Doctor?

Professor Smith—I have not the formula at hand.

Mr. Brown—I am glad the Doctor called attention to it, because somebody would have used it and burned his orchard.

Vice-President Roberts—I think one more statement should be made. It is a salty combination, and if it is ordinarily used any stock that comes along will eat any drippings out of the dirt, and it is sure death to them.

Mr. Brown—That is, the arsenate of soda?

Mr. Roberts—Yes.

Mr. Brown—We have not had any such experience.

Vice-President Roberts—I think Arthur Collins had such an experience.

Mr. Brown—We had an experience this last year with salt in the L. S. S. wash. The salt is put into that wash and it is generally supposed to make it adhesive. Yet, we had an experience in the Hood River Valley, where apples are grown at \$5 a barrel in the orchard. They spray every two weeks in the season on account of the abnormal growth of vegetation, and the abnormal growth that is on the apple trees would so enclose it that the apples would not mature. They spray for the scale with lime, sulphur and salt when the trees are dormant. As quick as the foliage comes on the trees they use the lime, sulphur and water without the salt, and we have one party to whom we sold

three machines. He is the man that owns somewhere between 1,000 and 2,000 acres, and he is going to keep on until he has every acre in apple trees. He sprays the lime and sulphur wash all summer. The salt has two properties—one adhesiveness and one to make the wash caustic.

A Member—I would like to state that when people want to boil this mixture I think my way of doing it is about as cheap as any. I use an ordinary galvanized cooker that holds 100 gallons. I get the heat from the lime, but after the lime stops boiling I have a fire built underneath to continue the boiling. I think you will find that very satisfactory. I like it better than steam and it is very cheap to use.

On motion, a vote of thanks was extended to Mr. Brown for his very instructive address.

President Skillman—We have one more paper for this afternoon's program, entitled "New Jersey and the West—a Comparison," by Mr. Joseph Engle, Jr., of Mount Holly, N. J.

New Jersey and the West—A Comparison.

JOSEPH ENGLE, JR., Mount Holly, N. J.

Mr. Chairman and Fellow-Citizens of New Jersey: This is the first time I have had the pleasure of addressing your interesting meeting. Having been raised and always lived on a farm in this State, I was somewhat surprised, when I returned home from a visit to the St. Louis Fair and other parts of the West, to see my name on the program for to-day. My first thoughts were I would not attend the meeting; then I thought your Secretary must make *some poor* selections in the well-prepared program he has spread before us at this time.

I took a few notes while traveling, to see how the New Jersey farms and farmers compared with those in the far West, and I did not find one single instance where any farmer could better his condition by going West. In Ohio land is worth from \$60 to \$125 per acre; corn, 40 cents per bushel; pork, \$5.00 per hundred, and milk, 2½ cents per quart. In Indiana the price

of land is about the same, crops a little lower and help more scarce. In Illinois the land did not look to be so fertile. The corn, I think, would not yield more than 15 or 20 bushels to the acre, but we did not see the best farm land in that State. The corn stalks were left standing in the fields and the cattle divided their time between the cornfields and the straw and hay stacks that were standing here and there over those farms that were said to bring from \$50 to \$75 per acre. The houses were one story high, with very few out buildings and not much fencing.

After spending some time at the fair I took train for Keokuk, Iowa. The same condition existed all the way up through Missouri. Arriving at Keokuk I attended an interesting stone-road meeting, where I gained some points that made me think there are some worse places to live than in New Jersey. Farms there are selling for about the same as in the adjoining States. The friends we were visiting took us for a drive to see their investment in real estate about eight miles from town. They paid \$7,000 for one hundred acres, a fairly good house, very few buildings and fences. Their produce at that time was selling low: Potatoes, 30 to 40 cents per bushel; corn, 38 cents; hay, \$8.00 to \$10.00 per ton, and pork, \$4.50 per hundred. At the large canning house in Keokuk they were paying 10 to 12 cents for chickens; 13 cents for turkeys, and 8 to 10 cents for ducks and geese. These were all taken in alive.

I then went back to the fair and met quite a number of farmers from still farther West. They all told about the same story. The farmers in the States I visited do not have such outfits as travel over our stone roads to market. Most of them had a pair of poor horses or brood mares, an old wagon loaded heavily, that looked as if it would come apart. The harness consisted of rope traces trimmed with tarred rope, and a bed quilt for a blanket constituted many a Western outfit. I asked some of them how it was they brought such teams to market and left the best at home, but the answer was, in nearly all cases, "These are the best we have; the others are sold to pay our high rate of interest (which is from 6 to 8 per cent.), the taxes, etc." So the best horses must go East or to the cities.

I spent one day at the St. Louis stock yards. There hogs were selling for \$3.75 to \$4.30 per hundred; steers, \$1.75 to \$4.00 per hundred; horses, \$50 to \$100, and mules \$75 to \$130. By these prices we see our dealers in horses and mules are not losing as much money as they claim when they only get \$425 for a pair of mules that cost them \$260 in St. Louis, with \$20 added to land them in Philadelphia.

We next visited Little Rock, Arkansas, 350 miles south of St. Louis. The railroad runs the greater part of the way through forests and swamps, and as there had been no rain for several weeks everything was very dry, and forest fires were raging for miles and they made no attempt to put them out. Little Rock is quite a business town, of 65,000 inhabitants. There on the streets one could see plenty of farmers selling their produce for about one-half that we get for ours; their rigs corresponded with those up in Keokuk, only a little more dilapidated. With our friends we went for a drive through the cotton fields. The upland was pretty well farmed out. The cotton, not more than three or four feet high, yielded 150 to 200 pounds, while down on the bottoms it was six to eight feet high and yielded from 250 to 400 pounds to the acre. The price at that time was 10 cents per pound, but I see by the papers it has gone down to 5 or 6 cents per pound, and in some places they are burning it to hold the market. So I think there is not much chance nor encouragement for any New Jersey farmer in that section.

Under the protection of our friends we spent one day at Hot Springs, which is quite a winter resort for invalids. Water comes directly from the mountain hot enough to cook an egg. A new race track is there that will cost, when completed, \$250,000. We also visited some large hotels and club houses, but I could not see where these club houses were of any advantage to the farmer. I would add, if there is any young farmer present that contemplates going West to better his condition, he had better take a trip out there and look the situation over carefully, before all these New Jersey farms, that are selling for less than the buildings and fences on them cost, are sold, without considering we have the best markets and stone roads of any State between the

two oceans. In conclusion, I wish to thank you all for your kind attention.

A photographer being present, moved by Dr. Ward that a picture of the Society be taken at noon to-morrow. Carried.

On motion the meeting adjourned until the evening session.

FIRST DAY—EVENING SESSION.

THURSDAY, January 5th, 1905.

The meeting was called to order by President Skillman at 7:30.

Fruit Packages.

A. N. BROWN, Ex-President Peninsular Horticultural Society, Wyoming, Del.

Mr. President: The matter of packages I regard as one of the most important features of fruit growing. In fact it has more to do with profit in the business than we sometimes think.

You know fruit growers are too apt to use any sort of package because it is cheap. They are apt to use a package because it seems to suit their ideals, and what is the result? We have packages of all styles and sizes. Just as your President has so well stated to-day in his address, they injure the sale of our products. What I think we want as much as anything else is a uniform package law. That is absolutely necessary.

Another thing we want is, to use good packages. Packages have been getting higher in price all the time, because of the scarcity of lumber, the higher price of nails and the hardware that enter into the making of the packages, the increased price paid for labor and the difficulty in getting labor to make packages as they made them a few years ago. Boys who tack up the divisions that go into the 32-quart berry crate will for the same money do only half as many as they would five years ago, and

that same thing seems to be the way all down the line. What is the result? We have been making a demand for a cheap package. That has been going up from fruit growers all over, and the more we demand a cheap package, the poorer package we get. I think as horticulturists we make a grand mistake. We want a good, an attractive and uniform package for fruit. Three things that are positively necessary, and we as horticulturists in a Society like this ought to agree on some line of action by which this could be accomplished. My idea has been that we should get a national law establishing the size of packages. Of course we could not have a law establishing the style, because I would not want to be prohibited from using a certain style if I thought better, but I ought to be restricted from giving a short package, unless I mark it short. If I ship a quart of berries, it ought to be a full quart. If I ship a barrel of apples, it ought to be a full barrel. If I send a $\frac{5}{8}$ basket of peaches, it ought to hold the full number of 20 quarts. That is the way all along the line. A half barrel ought to hold a half barrel. If I were using a package that was short (and all short packages are known by the trade as snide packages), I ought to be compelled to stamp upon that package in letters at least half an inch in size, "Short," so that every customer would at once know when he was buying that he would not get a full measure.

Let me illustrate. Suppose you are using a full quart and I am using a short quart. The advantage I have over you is so little that the buyer will not recognize it, and yet he is not getting full measure. We have one grower on the Delaware Peninsula whose crates are made so that when they are full the crate will hold 19 pounds more than any other 48-quart crate manufactured on the peninsula. That is the package of one of our largest growers. The package weighs just 19 pounds heavier than anybody's else. He has that 48-quart crate made especially for his trade and he is not losing anything by it. The consumers find when they buy any fruit with his mark on it is a full quart, and what is the result? He is getting full prices. Although the goods may not be the best, the consumer has learned that he is getting full quantity.

We use a great many of those half-barrel baskets for packing sweet potatoes, pears and other products. There are three sizes of half-barrel baskets manufactured on the Peninsula. I know over here you have one-third baskets, but we do not, unless some of the manufacturers make them so short that they are one-third. When we get an order for a carload of Kieffer pears from Chicago, Detroit, Cincinnati, or any other Western market, one of the first things we have to settle is, How much have you in the half-barrel baskets? What are you using? Sometimes while we are dickering as to the size of baskets somebody else steps in and we lose the sale. That occurs frequently at my home station, because of the varying size. What I say on that relates to others. Men telegraph their orders, as they want to know what they are getting. They are willing to give what the stuff is worth, if they get the full quantity, so that the size of the package is one of the important things, and I think our horticultural societies ought to demand a national package law. I have advocated the organization of a National Horticultural Society to take such matters to Congress, and I see there is a movement on foot to effect such an organization. There is to be a meeting of the representatives of the different State Horticultural Societies to try to bring about something of that kind, and I shall be very glad when it does take place, because I think upon many of these things relating to horticulture we ought to have legislation.

Another thing about packages that is important is the attractiveness of the package. People will pay for things that look nice. You can go into the grocery store, or into the market to-day and see all sorts of commodities that are offered for sale—packed in what? Why, in the most attractive packages and most attractive wrappers. Why? It does not make the material in that package any better because it is wrapped in an attractive package, but you will pay more money for it than otherwise. Every manufacturer of commodities recognizes that. So you see our grocery supply manufacturers are, perhaps, in the lead in that respect. They are having all sorts of their commodities wrapped in the very nicest packages, and they are making us pay for the packages. If we see a thing put in a nice package

what is the impression? The impression is that it is better than if it is packed in a poor and unattractive package. The first thing that impresses the consumer is that the person who has taken all that care to put the article in an attractive package is nice and neat and has not put anything that is not first class in that package. If a thing is packed in a rough package we would not take it home, but if in a nice package we would. Will not the consumer do the same thing with a package of peaches or pears, if we put it in an attractive package? I think he will.

I have seen fruit growers ship their fruit in all sorts of packages; so have you, and there are lots of them, particularly when they can sell their goods right at the depot. They use all kinds of packages and do not care how the buyer gets along with them. I have seen people ship asparagus in goods and cracker boxes. I do not know whether they make a profitable business out of it, but such things ought not to be done. We ought to be at the top of the ladder in this horticultural work, and the package is an important part of it.

Then, the package ought to be such as to hold every part of the fruit without jostling. There was a time twenty-five years ago when we could ship open packages better than we can to-day. The transportation companies used very much lighter engines than to-day. At that time they had not the modern equipment, which, by the way, is an injurious thing to the fruit business. We may not have thought of it, but it is. When they stop a heavy train running thirty-five miles per hour within its length there is a jolt. If we ship our peaches in an open basket they tumble out. As Mr. Blodgett said at our meeting last year, when they get a basket of Delaware peaches a quarter of them are out on the car, and, coming all the distance from Delaware to Massachusetts, you know the condition of that car. He said when we buy your peaches we must buy at prices low enough to overcome the loss resulting from that. So, under modern improvements, we must have a covered package that will hold the fruit without jostling.

Another thing, these large engines are not handled with the same degree of ease, weighing as they do from 135,000 to 200,000 pounds, when, up to ten years ago, the heaviest weighed from

60,000 to 135,000. What is the result? When they get to a siding the engine is heavy and goes back with force, and unless your package is well built and strong, and has a cover, out goes a lot of the fruit, or, if it don't go out it is badly jostled. Those are present-day features. I do not blame the railroads for adopting modern appliances. I would not have them do away with the air-brake system. With their heavier engines they cannot move the traffic of the country. They have more cars on their trains. We do not ask them to go back, but at the same time we fruit growers must meet the conditions, or else go backward.

Another thing about packages that we want to pay particular attention to is air. A few years ago it was thought that fruit wanted a great deal of air, particularly in transit. We are getting over that. We do not want too much air in fruit. Fruit will carry just as well without air as it will with it. We want a certain amount of ventilation, but not too much. These baskets were formerly made with great wide openings. You had more air, but you had something else. That something else was that the fruit would cut here, and a good deal of fruit was badly injured. Now, we want a basket closed just enough to give the proper ventilation, but not enough to cut the fruit. You can pack that in paper and there is no danger of cutting the side, because in these baskets you have not enough to cut the sides. That is an important thing. We find that the same thing holds good in the shipment of berries and practically in all fruits.

When the lid goes down I want it to go down solid on the basket. It may mash a few berries, but they will go to the other end in very much better condition and they are held firmly in place. Twenty years ago we did not need to take all these precautions. They were running light trains. To-day our cars are running from 60,000 to 100,000 pounds capacity, but not for berries. One cannot load more than 20,000 pounds of berries in them. The weight is not in proportion to the spring capacity. What is the result? It is as if you were riding in a wagon instead of a carriage which is adjusted to your weight. That is the best way I can illustrate it. There is the jolting and the bumping of the big engine which the crews cannot control, al-

though they are just as efficient as they ever were. The fruit is jolted all the time.

We have another basket here that we use in the early fruit business. In Delaware we are growing a great many early apples. We shipped 78 refrigerator car loads from my station this season, and of course the business will increase. The early apples have been more profitable to us than the late ones, and I think if we can just give to these New Englanders—these Yankees who are getting into our market and taking it from us—these early apples, we will have a nice business. But one never knows what a Yankee will do. We formerly shipped these early apples in the old peach crate. It is slatted according to the old $\frac{7}{8}$ -bushel. The crate was not very satisfactory, because at the other end the fruit could not be shown to the consumer without opening a crate. You could see them at the side, and our people, who are pretty shrewd, would lay the nicest apples along there, and sometimes they said the consumer received a crate of apples that in the center was entirely different from the side. I do not know whether that is true or not. I do not pack them that way, but perhaps some of us have run against something of that kind. It cannot be done with this basket. It takes but very little trouble to loosen the hook on the side and examine the fruit, so that the consumer could "get onto" the seller easily. The crate is a beautiful package to handle, very convenient for us, and a very compact and nicely loaded package.

Dr. Ward—What is the advantage; why not make them as wide all over?

Mr. Brown—The principle of making one end more narrow is that the full weight is not on the lower end. That is the principle upon which it is built. Secondly, they are neater and more attractive than they would be if they were built just straight up and down. We think very much of this package. By the way, in Jersey you have been shipping sweet potatoes in boxes, and some men down in Swedesboro have been getting very good money out of it. We found we could not ship our own baskets and get the money that we used to get. They come in competition with these boxes. Last year and this year we shipped them

in this basket, and I think we will knock out this box business. I do not know about that, either, because it is pretty hard to get ahead of a Jerseyman.

One feature about these other baskets I want to call your attention to. It is in the lid. The inside rim has been dropped and the lid goes inside. One can put his weight there and not break it. There is more importance to be attached to the firmness of a package than we sometimes think. I want to relate a little incident about some fruit that I was handling for a party at my station, shipped to New York. I shipped a car load of pears, and one of our growers wanted to put in a hundred baskets of pears. He bought a cheap basket with a wooden band. I happened to be in New York when that car load came in. They were received by Austin & Cochran, on Washington street. I was talking with Mr. Cochran at the time. The dray came in with the hundred baskets of pears and they sold at \$1.00 per basket. They transferred them from that dray to the dray of the man who purchased them. In the transfer there were twelve baskets out of the hundred in which the centre hook broke. What was the result? The sides bulged out and the pears dropped out of the basket. The man stood there and saw them transferred. He wanted the pears, but when he came to the broken baskets, he said, put them aside. When through he had eighty-eight baskets. There were twelve out of a hundred unsold. Mr. Cochran said, "Mr. Brown, you know the gentleman that shipped those goods; tell me how I am to write a letter that twelve baskets of those pears that were exactly alike, did not bring as much as the eighty-eight. If I tell him that the hoop was broken, I know what he will say." I know what sort of a letter was written, and he took his entire business away from that firm, and it was nobody's fault but his own. The pears were all right in this case, but the baskets were no good. No person could purchase them and sell them to the consumer, because he would say that is not a full package. If there are any questions I can answer, I will be pleased to do so. I want to impress upon this society the necessity of a uniform package, and I do not believe we will ever come to it until we have a uniform package law enacted by the National Congress. Many

States have laws; New York has a very good package law, but I can ship into New York, using any kind of a package, but the fellow who buys it in New York has the trouble.

Mr. Reid—Do you find that these apples in that package keep better in cold storage?

Mr. Brown—That is a hard question to answer. When I put pears in cold storage the baskets have heavy white paper on the inside. When I put them in intending to keep them a little while, I did not pack them in paper, but I would always put the paper inside. I have had a little bad experience with barrels in cold storage, and a very sad experience in shipping Kieffer pears to Europe in barrels, and I censured the New York exporters for it. I wanted to put them in packages, and they insisted they should go in barrels. Unless we understand the export trade, and know how to pack for it, we had better keep out. If we can get our Kieffer pears in cold storage and keep them cool, it is all right, but we cannot. Kieffer pears seem to generate heat. Some of the managers of cold storage have "caught on." There are men in this room that had car load after car load of Kieffer pears, and can answer that better than I can. We have been putting in from seven to ten cars at the Reading Terminal, Philadelphia, and we packed them in baskets, and found about as good success as when packed in barrels. The smaller the package the more money we get out of it. I was talking to Mr. Colorman, who has originated the Colorman apple, and he said he puts those apples in the New York market at a dollar a box. The box contains eleven apples. It pays us sometimes to put goods in small boxes. The apple box is getting very popular, but I do not believe it is advisable for us to advocate it as a measure and do away with the barrel, because with a large quantity of apples put in boxes the dealers would not take hold of them. I believe the apple box has its place, but we do not want to get away from the barrel.

Mr. Reid—I suppose one disadvantage is that when apples in a barrel begin to rot it affects the whole barrel?

Mr. Brown—Yes; it is likely to ruin the barrel.

Mr. Collingwood—Have you had any experience with the paper strawberry boxes?

Mr. Brown—No, sir. We are using at our station nothing but that thirty-two-quart crate. You could not sell a forty-eight-quart crate of berries at our station. At some stations they use nothing but the forty-eight, but we use *that* crate entirely. I do not know whether that paper box will do; when lumber gets more scarce it may be necessary. I would like to ask Mr. Collingwood what he has heard about it.

Mr. Collingwood—I have seen a few in New York.

Mr. Brown—I have taken up too much of your time. I thank you for your attention.

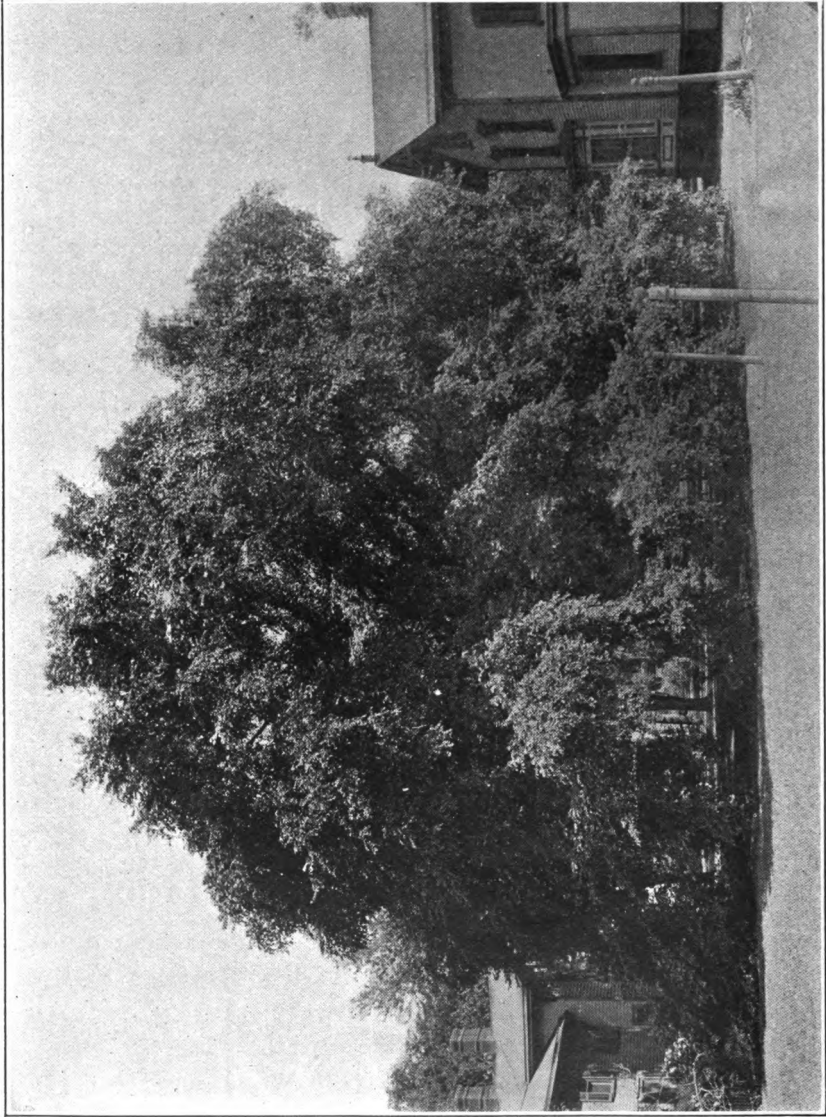
Miss F. L. Phillips and Miss Mabel Sperling then rendered a musical selection.

Illustrated Lecture.

H. W. COLLINGWOOD, Editor "Rural New Yorker."

I will show you some pictures of my home, where I live. A place on a North Jersey hillside that contains the earnings of a lifetime. The place that to me is better than any other place on the face of the earth—"Home, Sweet Home." I will tell you first how I secured it.

It was my great misfortune to have people on my father's side who never liked the country. My father's people, who came from England, were mill keepers or tradesmen or merchants in the town. They did not have that love of the land that I think people ought to have. My mother was a farmer's daughter, and as far as history goes in this country, her people had been land owners and loved the soil. My father did not love it. My mother did. A small legacy was left my mother before I was born, and her ambition was to take that and invest it in the old homestead where she lived as a girl. "No," my father said, "I want that money to invest in business in the town." And he had his way. He invested that money and when the war broke out he went to war and there was not a dollar of the money left. My mother was left with five little children. I know there was a shadow on that woman's life, because she had been denied



ELM ON THE LAWN OF CORNELIUS H. CLARK, 502 JEFFERSON AVENUE, ELIZABETH, N. J.

It is the largest tree in the city, and perhaps in Union county. The branches have a spread of seventy feet, and it appears to have fully outgrown the depredations of the elm beetle.

the privilege of bringing her children up in the country, where she could keep her family together. There was a shadow over her life, and I made up my mind that if I ever could get hold of a piece of land, I didn't care how rough or rocky it might be, I would buy it; that I would have a farm and a place on the hillside, where, if I had children, I could bring them up as I was not brought up. The time came when we were obliged to go to the country to live. We were not quite ready to buy our farm. Circumstances threw a lot of people into our care, and we looked around for a farm. I found this old farm on the Bergen county hillside from the railroad, in what we called the back yard of Bergen county. I found a farm where six generations had lived. We call ourselves the sixth and a half. The five did fairly well. The first bought it from the Indians. The next picked up stones, and the next picked up stones, and so did the next, and the next had a boy tired of picking up stones. There came a generation that would not live upon rye, pumpkins, milk and potatoes that could not be sold. They had a generation where the boy said he wanted a horse and buggy; and the girl said she wanted a parlor where she could take her beau, and the old man would not give it to them, so they moved away. I do not know but that they were right. I have always admired the independent spirit of the farm boy who will refuse to be satisfied except with the best that the old farm can give him. (Applause.)

We are all friends and neighbors. I know just how you feel. I secured that 90 acres of farm within 25 miles of New York—wooden buildings and old stone house—Washington slept in every room in it. (Laughter.) Is there a Jerseyman in this house who cannot tell you that Washington slept in every old building? If there is, he is not worthy of being called a Jerseyman. (Laughter.)

I bought this old farm and buildings that I could not build for \$6,000, for \$4,500. It was in the hands of lawyers. I always had an idea that lawyers are a growth on society and ought to be run out, but I always had more respect for them since they ran down the price of my farm. It was all grown up with briars and weeds and daisies. I was brought up on a rocky farm.

There were three miles of stone wall running around that farm; think of it! Think of the boys who did it, and the toil, the most useless job that was ever done. We went out there and faced the situation. And it occurred to me there was an experiment which our Experimental Stations could hardly be expected to take up—how to take hold of incompetent people and put them to work so that they would be self-supporting and good citizens. Can you bring the two together on an old abandoned hillside in New Jersey? That is the point. What are these old farms good for, my friends, if not for the raising of men?

An old and "worn out" farm, unskilled labor and the owner engaged in other business! To farm successfully under such conditions presents some complicated problems. We had all the conditions and we started with a wrong plan. We had been growing potatoes with some success on a rented place, where the soil was light and warm. We had a complete outfit of potato tools—from planter to digger. We tried to operate these tools on the rough and stony hillside and found that we could not compete with the level soils of the valleys. Our tools were made for smooth, open soil. They smashed on the rocks and did inferior work on the hillsides. We learned that, while it is possible to grow corn and potatoes on the hills, they are not at their best, and no one can farm successfully in these days without selecting the crop that is best adapted to his soil and location.

What, then, are these abandoned hill farms good for? If competition is to crowd them away from cultivated farm crops, are they to be left to grow up to brush and trees? The very growth of the forest taught us our lesson. If this land will grow birch, chestnut and oak without cultivation or care, why will it not produce fruit trees with fair handling? I found many seedling apple trees growing on the hills, and I accepted that as evidence that this was good apple land. We, therefore, decided to divide the farm into two parts—the hill pastures, or about 80 per cent. of the area into orchards, and the lower, level portion to be used for such crops as potatoes, onions and small fruits.

We wanted an orchard planted and cared for in such a way that one man or boy could take care of the greatest number of trees. As the chief expense in caring for an orchard on modern

lines consists in cultivation, we planned to reduce the labor and cost of cultivation to the lowest limit. I thought then, and I still think, that the same amount of cultivation put on the crops which grow on the lower, level land will pay far better than on the hills among the trees.

Briefly stated, our plan of planting and caring for an orchard is as follows: We plant either in sod or, in land that is to be seeded as soon as possible after planting. For apple we like two-year-old trees and for peach, June buds. These are cut severely back, both root and top. The object in cutting back the top is to have complete control over the new head which the tree is to make. Where the tree is merely nipped back and the branches left much as they come from the nursery, the head is never under complete control. The object in cutting back the root growth is to secure a growth below ground as near to that of a rooted cutting as possible. This appears to give a deep tap root and a more vigorous root system generally. I have tried the experiment of cutting off all the side roots and planting the trees in a mere crow-bar hole, with the dirt firmly packed around them. These trees started below ground just like a currant cutting; that is, the end of the root calloused over and sent out two or three roots straight down into the ground. Their growth was slow during the first ten years, but they afterwards gained and became as large and thrifty as those planted with long roots. The objection to this severe root-pruning is that, unless the trees are tied to stakes, or fastened in some way, they whirl about with the wind and make large holes at the surface and often fall completely over. We now prefer to leave about one and one-half inches of side root on the peach and three or four inches on the apple, in order to anchor the tree firmly in the ground.

In planting we simply mark off the ground at proper distances, usually 16 feet for peach and 32 feet for apple, and dig holes just large enough to hold the roots without cramping. The trees are planted about an inch deeper than they stood in the nursery. The upper soil and the broken sod is put at the bottom of the hole and packed as hard as it is possible to do so with the heel. If the field has not been seeded, a small quantity of commercial fertilizer is scattered around each little tree. If the field is in sod about

seven hundred pounds of high-grade fertilizer per acre are broadcast evenly over the field. When convenient in the spring a space about four feet in diameter is hoed out around each tree to kill the grass and weeds and to work the fertilizer into the soil. Anything we have that can serve as a mulch—manure, straw, weeds, grass, or even brush, is piled around the young trees. This keeps the soil cool and moist, but care must be taken or mice will work under it and gnaw the trees.

The grass is handled in two ways. On the smoother fields it is cut at the usual time for hay and about two-thirds of it hauled to the barns—the rest being piled around the young trees. One plan is to haul back the manure obtained from feeding this hay and use it for mulching the trees. On the rougher fields and those at a distance from the barn, we plan to cut the grass at least four times during the season, leaving it scattered evenly over the ground. I notice that fruit trees on a well-kept lawn, where the clippings are all left on the ground, are usually strong and thrifty.

Trees handled in this way have made a strong and steady growth with us. At a fair estimate one man can care for three and perhaps four times as many as where they are to be thoroughly cultivated. Such trees in sod and kept mulched head lower to the ground, which is an advantage with us, both for spraying and picking. It is also better on our hillsides where the winds are high. Such trees appear to be smaller than the cultivated trees, and grow with a different shape—being more in the form of a thick bush. They seem to come into bearing earlier and give fruit which averages smaller than from cultivated trees, yet firmer and more highly colored. We plan to sell most of our fruit in small, private packages, and this class of fruit is very popular for family trade.

This plan of orcharding offers control of the rough hilly land to members of an ordinary family. On the lower lands various plans can be followed. If the soil is well drained and suitable, three or four acres of alfalfa will provide hay for all necessary stock and manure for the trees. Or it can be sold to dairymen or horsemen after a good trial of it, so as to bring nearly \$60 an acre. The object of such crops is to make the land produce a fair



income without an excess of labor. Where workmen are unskilled and where the owner cannot be on hand at all times, labor is the most expensive and troublesome element. Consequently the crops that will come nearest to taking care of themselves will be best for such a farm. On the lower part of one farm we have two orchards, both in sod and of old-fashioned high-headed trees. From May to September we pasture hogs in these orchards. They eat the grass and windfall apples and with a fair amount of grain make good pork, which pays a fair profit. In addition to this the good they do to the orchard by their manure and rooting about the trees is very evident. We do not ring these hogs, but permit them to root. It is true that they tear up the ground, but early in April or late in March we scatter red clover and rape seed in the mud and obtain a fair catch which gives good feed by May. I would not put hogs in a low-headed young orchard or in such an orchard when the fruit is ripe, but among old, high-headed trees they do well. They are the best stock I have found for such a farm as ours, since they practically care for themselves and save labor by harvesting crops.

For a money crop we have found transplanted onions very useful. We use the Prizetaker variety, which seems best for this purpose. The ground is made very rich with manure and fertilizer, and carefully plowed and fitted. The seed is either started in the hotbeds in March or started outdoors as early in the season as possible. When the plants have a bulb about as large as a lead pencil, they are transplanted like cabbage in rows or drills eighteen inches apart, and about four inches in the rows. Constant and thorough culture is required and if this is given, and the season is a fair one, immense onions will be grown. They are very mild and pleasant in flavor and we have no trouble in selling them at a high figure. Peppers have also paid us fairly well, one year with another. We find this crop more useful than tomatoes on our soil, which is inclined to be late and cold. Strawberries pay us moderately well, but other small fruits are not so useful, though currants are promising.

On such a farm as this the child crop is of the greatest importance. The redemption of an old farm does not seem complete

without the salvation of some one—man or child. Our children are expected to work—each to do some little share of household duty in exchange for the privilege of home. This plan of farming is one in which the labor of the infirm or the unskilled may be utilized and made valuable. There is no greater public problem to-day than that of relieving the city, and by so doing relieving the country, of the help problem. This plan of farming seems to offer a way out.

At the conclusion of the lecture Mr. Blackwell moved that a vote of thanks be tendered Mr. Collingwood for the best address that had ever been made before this Society. Carried.

It was also moved and carried that a vote of thanks be extended to Mr. Brown.

Adjourned until January 6th, 1905.

SECOND DAY—MORNING SESSION.

TRENTON, January 6th, 1905.

President Skillman—The first thing on the program this morning is the report of committees. I will open the question box a little later for a special reason. Are there any committees to report? If not, the next business is "Remarks by Delegates from Other Societies." We have a number of visiting delegates here from Delaware and elsewhere, and we shall be pleased to hear from any of them. I know we have a couple of gentlemen from Delaware and several from different Granges. If they will give us a little talk we shall be pleased to hear them.

Mr. Brown—We have the President and Secretary of the Peninsula Horticultural Society.

President Skillman—We shall be pleased to hear from them.

Mr. Webb, Secretary of the Delaware Society—I am delighted to be with you. I have known for a long time that you had a very progressive Society, and it has been my pleasure to visit you on one or two occasions previously, but I believe this is the

best meeting of the Society that I ever attended. I want to tell you that your President was down with us last winter and brought us a good deal of information. He got up before us and stated that we were to look upon him as the representative of the handsome members of the New Jersey Society.

President Skillman—That was the ex-President.

Mr. Webb—Why, Mr. President, your memory is short.

President Skillman—No, it is my modesty.

Mr. Webb—Probably. We put before him a beautiful young lady who had a very melodious voice and we let her sing. "Oh," he said, "I am going home and tell the New Jersey people we must have music in our meetings; you cannot run a fruit and flower business without music." I see that he has it. I cite this trifling thing as an illustration of how the Societies may be benefited by an exchange of delegates. Since the time that men began to get together to talk about their business they have been making progress; a very large part of the progress in horticultural practice is due to getting together and discussing horticultural subjects. I know that on our peninsula we have many men who have made improvements in their practice from what they have heard at our meetings. We had with us some years ago Dr. Smith, of Washington, D. C., who gave a talk about the diseases of cabbage plants, how they are conveyed from plant to plant and how they might be prevented. One of our members said if he had had that information nine months before it would have saved him \$200. He had a loss of at least that amount and he has told me since that he put this information into practice and has saved his crops. That amount will pay your dues to horticultural societies and your expenses in attending the meetings for quite a number of years. So in a multitude of other things. The members come together and get information and use it and so horticulture is advancing. I congratulate the Society upon its membership, upon the great work it is doing, upon its handsome President; and I congratulate the State of New Jersey upon having such a Society as this. (Applause.)

President Skillman—Senator Wright, there has been a call for you, and, if you please, we would like to hear from you and have you make a few remarks.

Senator Wright—I do not know exactly on what line to make those remarks. It seems to me if a person wants to know about fruit and vegetable growing you have very able speakers, who are schooled in that line. You certainly have a beautiful display of fruit and a very pleasant meeting. We have enjoyed being here with you, and we hope that some of you people, at least, besides the delegates, will visit us and attend our meeting on the 17th and 19th of January. I think it will be a good idea if all these kindred societies will make an arrangement to exchange delegates—New Jersey, Maryland, Pennsylvania and New York—and get together that way.

A farmer gets into a rut and he follows that. He knows it all, and there is nothing else to learn. Well, the older I get I find the less I know about horticulture. I try to learn something all the time, and I think in a gathering of this kind there is always something to learn. There is a point Mr. Brown touched on last night that I wanted to say something about, but the program seems to be pretty well filled. It is in regard to the uniform package law. There has been an effort in our State to get that, but we have not succeeded. We need it, because we have many manufacturers of cheap baskets, nearly every one manufacturing a basket of a different mold. Notwithstanding the dealer wants to be honest, it frequently happens that he gets left in the latter part of the season, as he cannot get the packages from his usual dealer; he has to take something else. That is not his fault, and if it does not measure up he has to bear the responsibility.

It is the same way with the berry crates. I knew a neighbor of mine last year who bought some berry crates. He thought he had everything all right, but when he took them to town the buyers said he did not have a standard crate. The berries were all right. He saved about one cent on a crate, but was docked something on the berries, so he lost by the transaction. It will pay to have them all right, even laying aside the honest part of it. Another thing, when a man buys a package of fruit or vegetables, or whatever the article may be, he wants to know what he is getting. He wants to know if he buys a barrel of potatoes that he is getting so many bushels in it. The same way with these $\frac{5}{8}$ baskets and these quart baskets. If the State would pass

a law of that kind I do not see that it would do very much good, for we should have a national law. Then we would have a standard that would not prohibit the grower from putting up the sized basket he thought was best for his products. If it be a half-bushel, let it be a half-bushel, and then a man will know exactly what he is to get. In regard to such a law it seems to me the Pomological Commission at Washington would be very glad to have delegates come there and meet with them to frame what they think would be a suitable bill and present it to see if it could be passed. I think that would save time, because in order to organize a national horticultural society it would take some little time, and some sections might be freely represented and some might not be represented at all. If the horticultural societies call upon the President to appoint a delegate, or several delegates, it will be all right. Take the society in Western New York, which is quite a large society, they might send more than one man. Let those men get together, and it seems to me we could have a uniform package law in that way. I think that would be a great advantage. I hope that the time will come when we can have something of that kind. I believe that is all I have to say to you this morning, gentlemen.

President Skillman—I will say, in reply to Senator Wright as to a national organization, that there has been such a movement on foot. There were meetings called and every society was asked to send delegates. This society was, but none were sent. The meeting was during the St. Louis Fair, in October. I do not know whether they organized and formed a national society.

Mr. Brown—They have formed a temporary organization, and, I believe, have appointed another time to meet.

Senator Wright—I think that we need something national now, different from the old Pomological Society. I think that that has outlived its usefulness. They have a lot of old fogies who run it in a certain way and do not keep up to the times. I think if we had a live fruit growers' society it would accomplish a great deal more than that society. I am pretty sure the time has come when we need something more up to date than the old American Pomological Society.

President Skillman—It has a good, live man at the head, Mr. Hale; perhaps he can get good work out of it.

Dr. Ward—Speaking of the American Pomological Society, I think the delegates who attended the last meeting were satisfied that it was passing into scientific hands, and if it continued on those lines its early death was assured. But at that meeting a conference of some of the fruit growers decided to change the character of the society. Mr. Hale was put at the head; Mr. Garfield, whom we all know and love, was also added, and he is taking an active part and is working on more practical lines. It is to go back into the hands of the fruit growers and out of the hands of scientific men. While science has its place, we still want something practical. I think those who are in charge now will see that it is run on different lines.

Senator Wright—I am certainly glad to hear that. When they put the Pomological Society into the hands of Mr. Hale, Mr. Garfield and men of that class, they will have a good live society. Those men have not taken an active part in years past. Science is all right, but we want some practice along with it.

Mr. Collins—It occurs to me that the remarks made by Mr. Wright are all right, but they do not go far enough, in my opinion. Mr. Brown last night spoke of the reform package of certain sizes, but that does not go far enough. He said it will hold $\frac{7}{8}$. There is not one in 50 goes to the consumer. That is the trouble. The grower and the consumer are too far apart. The consumer will pay as much for half a package of his fruit as he realizes for a package, and in many cases he will still buy half-barrel baskets. Now, we are shipping by the reformed package. It goes to New York or Philadelphia. They have a very small basket to put it out in if it is nice fruit. It is the same with pears in Philadelphia and other places. A basket of pears is so much—take them or leave them alone. In many cases it would not be over three-quarters of a quart. It is the same with our truck and vegetables. Philadelphia will pay 10 cents a basket, and the consumer will pay sometimes 10 cents for a quarter of a peck.

President Skillman—By special request we will open the question box. When opened we sometimes get into a long discussion, but we do not want to in this instance.

Thirteenth Question.—"How far apart should strawberries be in a row and what is the best method of cultivation?"

President Skillman—This question is put in especially to draw out Mr. Allen, from Salisbury, who is a strawberry specialist. We will be pleased to hear from him.

Mr. Allen—It has always been my practice to plant in rows $3\frac{1}{2}$ feet apart, and the distance in the rows depends very much on the variety. With such rank growing varieties as the Excelsior three feet in a row is plenty close enough. They will fill up then. But take a variety like the Novice or the Bubach, 15 or 18 inches would be better. Yesterday there was quite a little said about pedigree plants. I have had some experience along that line. All the pedigree I want is a good thrifty plant true to the name, plenty of manure and plenty of cultivation. That covers the whole pedigree business, as far as my judgment goes. In propagating strawberry plants it is not like vegetables that can be grown from seed. A plant is nothing more than a cutting, and I have never seen where there was any chance of its changing its character that way.

Mr. Black—How late do you cultivate your strawberries?

Mr. Allen—As long as the grass grows, generally about the middle of September.

Mr. Black—I never cultivate them after they come in bloom.

Mr. Allen—We never have done it.

Mr. Black—You do not cultivate in the spring?

Mr. Allen—We never practice it. I have known others to do it and receive benefit. The cultivation should be very shallow in the spring, because the roots are near the surface and should not be disturbed.

Mr. Black—What do you mulch with?

Mr. Allen—Wheat straw.

Mr. Black—Do you mulch all your strawberries?

Mr. Allen—No; and I am sorry to say it is not the general practice to mulch in Maryland.

Mr. Black—It would be almost impossible to get material enough to mulch.

Mr. Allen—Generally that is true; but they could get enough if they tried very hard.

Mr. Andrews—Do you fertilize in the spring?

Mr. Allen—Yes; using a fertilizer with very little nitrogen, very little ammonia. Where land is scabby I prefer to use something that is a little quicker. The roots grow more or less all winter.

Mr. Andrews—Broadcast?

Mr. Allen—Yes, sir; broadcast on the row; not in the middle, because plenty of them get there anyhow. We use a fertilizing distributor that spreads out fan-shape and distributes it evenly all over the bed.

Mr. Andrews—One row at a time?

Mr. Allen—We have a two-row Hart machine and two fan-shaped arrangements going over the row, striking the row with the Hart machine. You want the row to run regularly.

Mr. Andrews—Do you fertilize with much potash?

Mr. Allen—Yes; potash is needed to give color.

A Member—And hardness, too.

Mr. Allen—Yes; too much ammonia and not much potash is inclined to make them soft.

A Member—What is your most profitable variety?

Mr. Allen—What would be the most profitable variety for me would not be for my neighbor, and what is most profitable this year is not the next year. Several years ago I might have told you with some degree of confidence, but to-day I cannot.

Mr. Dobbins—Some of the best plants will not bear transplanting and others tell us we want to get the plants for propagation near the parent plant.

Mr. Allen—There has been much written and said about that subject. A few years ago a great many plant growers would not have the plants from the tips, but they are beginning to think better of the tip plants, and I like them. They will not be as full of fruit buds, which is no objection, but they will come around next year all right. They will start off better and give a better growth than the others. In digging for plants ordered for my own use or for sale we dig the whole row.

Dr. Ward—I was sorry this discussion was cut off yesterday afternoon. It is a very important matter to a good many of New Jersey fruit and strawberry growers. I wish we could have had

that discussed yesterday, for I disagree with Mr. Rudderow. As I understood him, he has his in compact rows, about five feet across. Am I correct?

Mr. Rudderow—Five feet apart.

Dr. Ward—What is the width of the row?

Mr. Rudderow—If I found rows five feet apart I would expect to have about three feet bed; then if the fruit stems are three inches long, the 16-inch walk is taken up by berries and next summer there would be just a few inches of walk.

Dr. Ward—Your rows originally are five feet, with a row of peas between them? Then you must have a matted row from four to five feet apart.

Mr. Rudderow—No; three feet, leaving a walk-way of two feet. Then when the fruit comes on the stem they will crawl out in the walk and take up eight inches each side. That will take sixteen out of the twenty-four inches.

Dr. Ward—What class of pickers do you have?

Mr. Rudderow—Italians.

Dr. Ward—Men and women?

Mr. Rudderow—Men, women and children.

Dr. Ward—Can they reach from one side of the row over to the other without crushing the berry? You know as well as I know that in those matted rows the best of the fruit is on the outside.

Mr. Rudderow—Yes.

Dr. Ward—The fruit in matted rows is much smaller in the center; the best fruit is on each side of the row. How can you pick them when the rows are as wide as that without having the berries mashed on the outside of the row, where the good fruit grows?

Mr. Rudderow—There are some mashed, but it only leaves about two feet for one to reach on each side. It is natural that the good berries should be on the outside of the row. They can not be in the middle, because the fruit stems will always come to the top of the foliage before it comes into bloom, and as soon as the berry is large enough it has to fall. It can not fall in the middle, because there is too much foliage, and the outside is the best and easiest way for it to get down.

Dr. Ward—I would be afraid of losing a good deal of the fruit that is on the outside of the row.

A Member—I do not know how we can keep our beds down to such narrow ones. We have some of ours down to three feet.

Dr. Ward—In our neighborhood we try to keep the rows two and one-half feet. Where these enormous Hilton berries are grown for New York they will not have the rows over three feet wide. I should doubt very much, in view of the size of the berry, of the practicability of picking. That is one thing we have to contend with. We have some men and women, but it is hard to get them. Usually we rely on the boys and girls, with two or three men in the field; so it is almost impossible to keep them from mashing the berries on the outside of the row. I see Brother Dye is here. He and I are pretty good friends, but Mr. Jennings, this year at the Institute meeting, said that they invariably, in his section, allowed their berries to grow only one year. Then they destroy them and reset. That may be all right for an amateur, but I do not believe it is good doctrine to go out from the New Jersey Horticultural Society. It may do for the Institute.

Mr. Franklin Dye—Then you must not give it, if you do not believe it ought to go out here.

Dr. Ward—I am only telling what he said. If I have to replant all my strawberries every year I may as well go out of the strawberry business.

Mr. Dye—You do not have to. Pay your money and do as you please.

Dr. Ward—I have a great many of my berries that are two or three years old. I set out a great quantity every season, but I expect them to grow two and three years. In fact, I have nearly an acre that has been in four years. Last year the very best berries I picked on my place came off that piece three years old. As commercial growers we have got to look into these things. It is very well for an amateur to set out his garden every year, but as a practical fruit grower I believe it is a false doctrine.

Mr. Dye—I would do just as you do, Doctor. I would not set them out every year if I could keep them clean.

Mr. Rudderow—What do you mulch with?

Dr. Ward—With meadow hay and horse manure.

Mr. Rudderow—If you mulch with horse manure can you keep them for three or four years?

Dr. Ward—Yes; I have.

President Skillman—We will have to cut short this strawberry discussion, interesting as it is. We have a long program and there is a gentleman who just came into the room from the New York State Fruit Growers' Association, Mr. Hepworth. We will be pleased to hear from him. We do not ask him to be long, and, in fact, to be frank, we would rather he would not be.

Mr. Hepworth—This is taking me by surprise. I did not come here to talk and am very glad that you mentioned I must be brief. I am very glad to meet with you. I have met with you several times, and I do not know but that I am a member of your Society, as I have paid my dues two or three times here.

President Skillman—You ought to be, as you are good looking.

Mr. Hepworth—Thank you. I intended to be here yesterday, but somehow I was twisted in the date. I am very much interested in your meeting, and I have always noticed that you have a lively meeting here. I think I will just listen to what is to be said and talk another time. (Applause.)

President Skillman—Now, gentlemen, we will hear an address by Mr. Collingwood on "Horticultural Education for the Country Boy."

Horticultural Education for the Country Boy.

H. W. COLLINGWOOD, Editor "Rural New Yorker."

God has given man earthly ambitions and at the same time he has denied him the right or the power of ever realizing them. It seems to me that is a wise thing, because if a man came to the time when he thought his ambitions were fully satisfied, he would represent a dead tree. Down in Florida I saw a lot of pine trees where the turpentine men had been at work and had cut a big gash on one side and shaved off the other side. After a few years it killed the trees. The man who has his earthly ambitions fully satisfied is just like one of those trees: he has stopped growing. Therefore it is a wise provision that a true man is denied the right or the power ever to say that his ambition is satisfied.

Having made this statement, let me go on and say that to me our educators and teachers in the country schools, to some extent the teachers in our Agricultural Colleges, and those who have charge of the education of our children, are like those pine trees that the turpentine men have gashed and scraped and shaved. For some reason they refuse to admit that there is any progress in their system of education; that there is any use for them to get closer to the people, or get up higher, or change their methods. I have run across people who think that if they ever admit that our system is a failure, and if the vast amount of money that we spend for education is not wisely spent, they must admit personal inferiority, and rather than do that they stick to the old method. Or, on the other hand, if they change at all, they want to do something so entirely radical that people will see they are trying to experiment against their will.

That has been my experience in meeting a great many of these people. There are teachers, I am glad to say, who recognize the fact that the system of education in our country schools is not right, and that we need something else there that is of more practical value to country people. But so far as I can observe, a great majority of those who control education in this country want to go at that thing the wrong way.

Four or five years ago I went to a New England Agricultural College to visit the institution. A professor said to me: "While you are here I want you to talk to my class." I talked to those young men, and among other things I said this (I was trying to bring out the idea that a man must grow): "Suppose I said in the Rural New Yorker, 'We need a young man. We need an Agricultural College graduate, because we have reason to believe that a boy from college must know all about agriculture. We are ready to pay that man \$5,000. We want him to sit in a comfortable chair with a cushion *that* thick, and the higher the collar he could wear the better, and a white necktie; and we want him to answer a few questions and be the final authority.' If I made that statement, before I got out of that door every one of you boys would come to me and say, 'I am intimately acquainted with a young man who is just ideal for that position.' On the other hand, if I said, 'I want a boy with an open mind. I want to make him run errands. We have a man who will talk to him in strong language when he does anything wrong. We are going to ignore him and jump upon him in every possible way with spikes on our shoes, and pay him \$5 a week, but we are going to make an editor out of that boy.' Now, boys, anybody who wants that job hold up his hand." There was not a little finger held up.

"Now, boys, we will try again. If you sit down and write an article, write me about something you think farmers ought to read, from your own experience. Throw aside the things you have read and talk right out of your own heart, a little article of 500 words, and I will give you \$10 for the best one that comes. Don't attempt a scientific article, but tell me something out of your own heart, out of your own experience."

I went back and I received two essays. What do you think they were about? One was on "The Life and Character of Napoleon Bonaparte." (Laughter.) The other was, "Did Benjamin Franklin Originate the Postal System of the United States?" There, you have two essays from an Agricultural College in New England—the brain of the country. Was that the fault of the boy? No, it was the fault of the system of education. The man who taught those boys did not hold up to them the

natural and spiritual side of life. There was too much text-book in it; too much of the idea of holding them right down to the text-book in their lectures and recitations.

I make that point as an introduction to what I shall say—that any system of education must teach the boy that he knows nothing; that all he ever will know, that will be worth while, is what he grows into and works into inch by inch, and that he does not go out of school, or out of the agricultural college, with his head filled up. All he has is just the reading and the thinking habit.

Is there any need of special education in horticulture in this country and in this State? I say yes, and I point to my own experience as an illustration. I want and am trying to become a fruit grower, but do you know that every day in my life I rub up against the fact that twenty, thirty or forty years ago I ought to have known things that to-day make the hardest kind of work to think and figure up?

When I was a boy in the country school the only thing I can think of that was really of benefit to me was the habit of reporting three sermons a day in church. The old people who brought me up made me go to church three times a day and also Sunday-school, and I had to keep a record of the texts and what the minister said. If I did not do it I had no dinner. That was incentive enough for a boy, and I have often been sorry that I made that poor old minister say things that he ought not to be responsible for in order to get that dinner. (Laughter.)

That work of reporting, concentrating the mind on one thing, being forced to analyze it and to put it down was the most helpful thing in my education. I could have told you at one time the name of every river that runs from Nova Scotia to Florida. I could have told you the height of the Himalayan mountains, the length of the Amazon river and where the Mississippi river united with the Missouri. I spent useless days and weeks in learning those things; I am glad I have forgotten them.

I mention this to show you how a farm boy in those days was educated, and handicapped, and how the farm boy of to-day is handicapped. Do you want the boy who follows you to be handicapped in the same way? No. The soil in the East is different from the West. We are handling something that must be re-

enforced and against the strong land of the West. They are putting more and more of that strong land into cultivation, and if your boy is educated the same as we are what will be the result? Think what would happen to one of those old knights, with armor and a big sword and club in his hand, walking across the street to fight against the man with the modern nine-shooter revolver.

It is not easy for a man of forty or forty-five to pick up science. I know from experience that when a man's habits of thinking are formed it is hard for him to absorb new ideas, or to overcome the old prejudice of looking at things in the old way. Let no man tell me that it is not a necessary thing for a boy and girl in the country at the present time to absorb something of farming and or horticultural education. I know better from my own experience and life. You cannot convince a man when he has it right in his heart and carries it with him every day as an encumbrance—this unsatisfied longing for education. You cannot convince me that it would not be a good thing to have dropped out the Himalayan mountains and the Missouri river, and obtained some information about fruit growing and country life.

We need the most elementary form of education. I do not blame the scientific man, because he can not get away down. That is not his business; his business is to investigate and find new things. Put that man into the school-house to-day with a lot of children just groping around with their eager minds and he would not make a good teacher. Could we make a success of teaching a child his letters and the little elementary form of words? No. Your daughter at fifteen, mine at twelve, a boy of sixteen would make a better teacher for those children than we would. Why? Because they can better comprehend the position of that child's mind; they know better than we do what it does not know. We have forgotten it. We cannot realize the time when we could not tell the difference between A and B, but teachers trained to the business can teach better than we can. It is the same with this matter of agriculture and horticulture in the common schools; before we can make a success we must educate the teachers. We must have the men, women and children

who go to our Normal Schools and High Schools get over this idea that there is anything inferior about cultivating the soil.

The average boy and girl will never go beyond the district school. I know they are talking about concentrating, and carrying children to some central place in wagons, where they will be educated. There are two sides to that. With one side advocating the teaching of scientific subjects in our country school, and working hard to get teachers to teach them there, and another set working equally hard to give up the country school and locate one in a central place and carry children there in a wagon—it looks to me as though there would be strange yeast in the rising generation. I do not think this science can be effectually taught in a town school. If a child is to be taught agriculture or horticulture, it must be done close to the farm in the country, and part of that education must be worked out on an actual farm or an actual garden.

I, therefore, say first, that if the principles of gardening or horticulture are to be taught in our public schools, we must have the teachers educated to do it. Next we must take the children back into the country and teach them the principles there. It must be an elementary education. This idea of teaching children that it is dishonorable to work on the farm is wrong. I know a little girl that I took to the farm. The child was not well, and we thought it would be a nice thing to have a child go to the town school to be educated. She went. One day they were eating their lunch and with that they began to talk about what their fathers were doing, and bragging about how rich their fathers were. This father was a clerk in a store, and everybody thought that was wonderful. Another little girl said, "My uncle is a lawyer!" What a wonderful thing is that. And another girl said, "My father is a conductor on a railroad!" Another was a mechanic, and another was a builder. One little girl's father was a fish peddler, and she said, "My father is a *vender*!" She would not mention the word peddler. They asked our girl, "What does your father do?" She realized her father was a farmer on a poor little farm, with a large family, and hard to get on. Her courage failed her and she said, "*None of your business!*" (Laughter.) If she had been brought up right, she

would have said, "Father is a farmer! The clerks and lawyers and all these others would starve to death if it were not for men like father—the farmer!"

That is the true spirit we must put in them. Who is going to put it there except the man and woman who teaches them? In heaven's name, why do we pay these millions of dollars to have such ideas put into the heads of our children, when they deny their father's business before children whose fathers are inferior in every way? It is a shame and disgrace that it is so. This matter of education must be elemental. You must get straight to the people, and make them feel that those who give it have it at heart.

There are three classes of society in the country. There used to be two—roughly classed. One was the man who owned a large farm and ran it well. He was a great big man. Then there was the little man, the small freeholder, who worked with his own hands, and occasionally hired help from the neighbor, a son or daughter. They worked well. We had them in New Jersey; they were the bone and sinew of this State. These were the two classes to whom the people looked. In the last twenty years we have been developing slowly a third class. Many of them have come from the farm. Some were the result of the practice I mentioned last night. When a farmer made a hundred dollars he never thought of investing that in his own farm, but sent it to Texas, or some place out West, and received 10 per cent. He did not think of investing it in his own boys and girls. This class of people may, possibly, own a bicycle on the installment plan. They may, possibly, have their life insured, but beyond that, the class of people I speak of are not property holders; they are not responsible—they are taxpayers. That class of people is growing larger and larger, and to my mind it is the most dangerous element in American society. We can take care of the anarchist, for we put him in jail. The Commissioner of Emigration went through the jails in a few States about six months ago, and found 37,000 inmates of those jails who were aliens, and who never should have been admitted into this country, as they were admitted contrary to law. We can take care of the anarchist who carries the red flag and the torch, because we have

laws to handle him, but what are we going to do with that worse than anarchist—the idler, the dawdler, the man who is ashamed that his father works with his hands. In my county we have a class of young people who live at home on the farm. They earn \$5 or \$6 a week at a city job and come and go. You see them go with a dress-suit case, or the girl with a music roll. One would think they were going to Newport. If you were to open the dress-suit case, you would find a sandwich or a piece of pie. Open the music roll and you will find a piece of cake or a piece of pie. In other words, these people are ashamed to be seen carrying a lunch. They are ashamed that mother, with her hard hands worn down to the bone by useful service, put up their food for them. I know in New York men who eat a plate of pork and beans for 10 cents, then stand on the Astor House steps to pick their teeth. The idea is, they will economize on a 10-cent plate of pork and beans, and imagine people will go by and take them for Wall street brokers. Now, those poor, deluded fellows, ashamed of the fact that mother and father are carrying them along, have an idea they can fool the people by eating a 10-cent lunch and picking their teeth before the Astor House. They are the most dangerous class in the country—the seeds of laziness and worse than anarchy. We must overcome that. It is part of an horticultural education to get down to men and boys, and show them the absurdity of such practice, and show them the dignity and honor of farm life.

How are we to do it? In the first place our scientific men can help us, but the parents must begin it. The scientific men can give text-books that are simple and clear. I ask you if there is any good reason why good farm literature should not be used in the place of the old orations and poems for the first class in reading in the country school? I do not mean an essay on drainage or some dry scientific discussion. But it is possible, if our scientific men will get at it, and if people will help them, to get up text-books just as readable as “Marco Bozarris,” or “The Raven.” Some that will tell about the crops, the home on the farm, and those things which will always appeal to a farmer in his own home.

Now right here, how many people have children in the public

schools? How many of you have ever looked over their text-books and know just what they are being taught? Hold up your hands. There are seven—that is a lucky number. Seven out of about 35 have actually gone through those text-books and know what their children are being taught. How many have gone through the arithmetic to know what examples the children are being taught? How many of those examples will help them on the farm? Mr. Allen raised his hand. What proportion did you find?

Mr. Allen—About one in 50.

Mr. Collingwood—Is there any reason why, if a country child is going to be taught in a country school, ninety-five per cent. of the examples that are to be worked out by the children should not be examples about measuring grain, about measuring the tonnage of hay, about figuring the number of plants that will go on an acre, or getting the pitch of a roof? Examples that would show the child how to measure a cow, how to get its weight and similar practical things? I tell you, my friends, men and women with boys and girls to educate, you are face to face with hard problems. The future of this country depends a great deal upon what you do in the next ten years. You may tell me what you will do about the town and the city, about the millions that are tied up and banked up there. My friends, that is all well enough. Where did it come from? Can you name a single thing, except ice, that did not originally come out of the soil? The farmer, the miner and the lumberman handled the crude material and the others put it together and passed it from hand to hand. The only conservative force we have to-day is on the farm.

You must have better teachers in the country schools; you must keep the school back near the farm and garden. You may do what you will with a school; you may have the finest teachers in the world, but unless you yourselves, men and women, have the interest of your country at heart, and unless you will take a greater personal interest in the school, it will not amount to much.

I taught in a log school in Michigan, where the boys tried to put me out. About the second week a director walked in with a big bundle of sticks. He said: "Now, scholars, we have hired

this man to teach this school; he is competent to teach this school and I think he is able to lick you. If you lick him by accident, you have to lick me; if you lick me, you have to lick the State of Michigan; if you lick the State of Michigan, you have to lick the Supreme Court. That is all I have to say." That is all the help I received. The biggest boy could not comprehend whipping the United States Supreme Court, but that is all the help I had. If there is anybody present who is a director of a school board in New Jersey, let him hold up his hand. There are six. How many of you will hold up your hands and make affidavit that you have done your duty fully as school commissioners? (Laughter.) A man's duty is like a rubber band, but what I am getting at is this: I have seen these school districts, where they put a teacher into the school, and state in effect that the man is hired and the State pays him to take care of our children—now let him take care of them! I know men and women who, when the school opens heave a sigh of relief and say, "Now we are not going to be bothered with the children." The parents first of all must bring about this reform in the school. We want work. It can not be done by merely talking like a parrot. The man who simply goes around and says "We ought to have better schools," and "I do not think that teacher is doing right," and "When I was a boy I had better than that," never helps the teacher and will never bring the study of horticulture into the public schools. How many of you bring your boys to these meetings? How many men have sons at home? Where are those boys? Why are they not here? If what you hear is good for you, why is it not a good thing for your boys? When my boys are old enough they are going to attend this kind of meetings. I would rather have the convention habit than the political caucus habit. I want them to come. Let the boys go to the horticultural meeting or to the Farm Institute. I went to Wayne county, N. Y., one day at a Farmers' Institute, and the chairman interrupted me to say, "I wish you would stop a minute; somebody is coming." I sat down and 75 bright, rosy boys and girls from the school came in. We put them on the front seats and they sat there. I thought that the noblest contribution to the Farmers' Institute I ever saw. The

boys and girls ought to be here, if you want to make horticulturists out of them.

Another way you can help is to take a personal interest in your school. Keep talking about that hopeful time when we shall have this thing—special education for the boy and girl, and we will see what talk can do. Twenty years ago I went through the city of Savannah and could not buy an apple. I went through Savannah again last week and what did I find? Every fruit store and every stand had just exactly as many apples as there were oranges. They had them piled up in rows of apples and oranges, a most beautiful thing. What touched me was an Italian in that southern city who on Christmas day arranged apples and oranges in the colors of the American flag. What took those apples down in 20 years? The constant talk, talk, talk, about the value of apples as fruit and sending the apple down.

Here is another thing. Some of you men are fairly well-to-do and can afford to go to your district schools and offer a prize for the biggest squash, the handsomest pear, or the tallest ear of corn. Get the teacher interested, those who are on the school board. You can do that, and it will pay well. The first year it may amount to nothing. Do not sneer at them and say, "When I was a boy I could beat that to death." Get that prize out there and give it in cash. Do not give an old book, but give them the money, for the child values a dollar. Put up this little prize every year. Go around from time to time and let the school board go around, and see how this little garden is getting along. I guarantee, if a man is in an intelligent neighborhood and will do that year after year the children will become interested and will raise their squashes and melons and the school board will go around together. How proud those little folks will be! They will make men and women for the farm. You do not know what it means, my friends, this matter of keeping at a thing until it gets to be hereditary. Just start in your neighborhood offering those prizes, and you keep at it. This year you may be disappointed in the result. Wait; those things will grow; they do not come at once. You have to do it, for nobody else will. Keep at it in a practical way, by offering this prize and talking to the children about it, thus making them believe that it is honorable, that there is

skill in raising good fruit or flowers, and keeping that idea before them all the time. The first thing you know, they will inherit it.

I went down to Georgia some years ago in winter. There was mud everywhere, all over the country. I said to a man, "What do you folks do when winter comes?" He said: "What do we do? Sit around the stove and chew tobaccor." It happened two months later I went to Lake Champlain. We drove through that beautiful Vermont country and I said to the farmer with me: "You must have a hard winter." "Yes, we do; the snow is deep and we have seven months of winter weather." "What do you do in winter?" "We have a free library of 10,000 volumes. So our folks have plenty to do. It takes a lifetime to read through 10,000 books and do it right." What does that mean? In one neighborhood there was no ambition, no desire to improve. The people had stopped growing. They thought their ambition was satisfied with a piece of tobacco. Heaven help such a man! On the other hand God had given these other men ambition. They knew they never could satisfy it, but they knew that the more they tried to satisfy it the higher they would grow and the greater the incentive to go on.

My friends, go on with this. It is a matter of growth. No human being can tell to-day how it should be done. We must work it out. Put your minds, your thoughts, your hearts on it, and make an honest effort and your work will make an impression on this and the coming generations and they will thank you for what you have done. (Applause.)

Dr. Ward—I believe, and know, and think that this Society owes a debt of thanks to Mr. Collingwood which it will be very hard to repay, for the two very able talks he has given, one last night and one this morning. I make a motion that we thank him by a rising vote.

Motion was carried.

How to Grow and Develop an Apple Orchard.

I. J. BLACKWELL, Titusville, N. J.

As far back as 1844 my father sold good apples in Princeton in March for twelve and a half cents per bushel. I distinctly remember the lectures of the Temperance party in the latter part of the forties; the abandoned still-houses; the many stumps remaining from the former orchards; the beginning of the new planting; the low prices of 1862, when apples were very low, and the extremely high prices a few years later.

How grow the apple? First, the soil for best results must be deep, yet with an ordinary amount of rainfall apples will grow on a very shallow soil, but it should be well drained. On the "Poor Farm" of Hopewell township there was an orchard that seldom bore fruit. The land would grow a good crop of corn or hay, but was too moist for apples. On the same farm, on a higher piece of land with some trap rock, is one of the most productive orchards in our section, the fruit selling for the best price. These two orchards are about 400 yards apart; therefore, the land should be dry and deep.

In propagating the apple I would prefer the seedling tree, grown from seed of any good thrifty-growing fruit. We have mostly used the Smith's Cider for seed, avoiding the Green or Newtown Pippin. If transplanted at one or two years of age from the seed bed to the nursery row and budded in August the bud is preferable to the graft, as it throws a stronger tree the first year. Grafts almost always have some trees that are not grafts, and grafts that are not true to name are much harder to tell than a bud. Practically there is little, if any, difference between a seedling, a root graft and a sucker stock, except where the top root is used for a root graft. Then those cut I believe to be worthless. It has been said if one plant sucker trees he will always be digging off suckers. This is not true. An apple tree throws suckers from shallow setting and no other cause. We have planted each kind and never grew a sucker, while the older plantings on the farm have thrown an abundance. The Dou-

cain stock is propagated usually by suckers. We have a few trees of this stock that, being low budded, have as large tops as the free-growing stocks. In fact, one of the largest Smith's Cider we have is Doucain stock. Of course, this would be different if top-worked. A one-year-old is the best to plant out in the orchard; it is the least work and will more quickly make a tree.

The tops should start within a foot of the ground, if for no other reason than gathering the fruit. Then, when spraying is done, there is no comparison between the high and low top. The wind storms and the flat-headed borer are inclined to pass the low-down tree, and lastly we gain quicker returns from the low-headed tree.

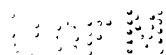
The distance apart entirely depends upon the variety. Cultivation ought to begin with the planting. It is useless to plant and then neglect. Corn, potatoes, clover, or any hoed-crop is the best, but never wheat nor oats. After the orchard comes to bearing I have faith in the hogs for cultivation. I have noticed after a shower, when the orchard was under the plow, the vast amount of water that ran off. I have seen as heavy rains when in sward, and only a small stream of almost clear water ran off the same surface. Now, here is an immense storage of water that will naturally rise to the surface, but that in cultivation would have been in the river. The grass ought to be close cut, cutting it whenever it gets high enough to cut. The orchardist who lets the grass and weeds flourish at the expense of the orchards has missed his vocation and had better reform, or sell out. The results of a good number of well-fed hogs I have seen. I have also seen the weeds and grass, and know the one to be a success and the other not so good.

Some of the blossoms are pink, some rose and some very dark. The color makes no difference, although the contrast is pleasing to the eye. All the blossoms have stamens and pistils, but the arrangement is different in some; the stigma is short and concealed by anthers, and fertilization is very uncertain, as seen in the Primate apple. Again, the stigma is long and extends beyond the anthers, as seen particularly in the Smith's Cider, and all prolific bearing apples or pears. You will also notice that each circle of anthers ripens or discharges its pollen

at different periods, so that the period of fertilization, except in unusually hot periods, extends over a period of about ten days, thus insuring fertilization without the aid of a bee, or any insect whatever. A half-hour at the proper ripeness of the flower, with the proper heat and moisture, will fertilize the ordinary bloom sufficiently to produce the largest crop. Moisture to grow and ripen the bud in August and some strength in the land to produce the crop is more important than planting a variety for the purpose of fertilizing the bloom.

Trimming is often excessive. Practically, the Smith's Cider is inclined to grow open and seldom needs thinning. Such as the Baldwin will be too dense, unless started with few branches without any central stem. Then how often we hear, "What is the matter with my orchard? It is old enough to bear; it grows but does not bear. What is to be done with it?" In such cases I find trimming is practical, each year cutting off all the spurs that if left to grow would produce the blossoms, and the blossoms, fruit. And again, in high-topped and open-headed trees, and especially where there is a little bend exposed, there the flat-headed borer takes up his quarters, and claims, in the end, the tree. Very few flat-headed borers are found where the sun does not strike the exposed trunks or limbs. On the other hand, the common apple borer is seldom seen where the weeds are kept down, as there is no shelter. We all know that the soda wash will keep down the louse, and the caterpillar cannot stand Paris green. Coal oil will keep down the Codling moth, when the trees are sprayed after fruit has set and grown to the size of a pea; also the scales at any time of the year, and the phyllosticta, in a measure. The last is, in my opinion, the enemy of the apple. The ammonia solution holds it in check very slightly. I am not sure of any remedy. The application of nitrogenous manures increases the attack, while potash seems to retard its progress. Cultivation increases it, and in fact the more luxuriant the tree, the greater the damage.

I have already stated that for transplanting the one-year tree is my preference. With this tree or with large ones, there is much need of getting all the roots; that is, the large roots. We often hear that fibrous roots are not of much account, for in most cases of transplanting the exposure kills these roots, and the



start is from the large root. The longer these large roots, the surer and stronger the growth. No harm is done in cutting off smooth and clean, and no particular good in so doing. Any trees affected with wormy apples or with knots ought to be dipped in whitewash. Always dig the holes large enough and deep enough to hold the tree. About the suckers, remember an apple tree set too shallow will always want to start anew. Success in planting depends upon firming the soil, planting where the soil is dry, and the more a tree is cut back the sooner we get a tree. Never use water in transplanting, as there is always enough moisture where the land has been properly prepared. With a practical test of the matter it makes no difference whether a tree is started where it is always to stand, or in the north, west or south; if you set these by the tree—that is, “to the man’s corn,” the fruit on each individual tree of the same variety will ripen at the same time. If low worked, and same condition of soil and exposure, of same quality.

What a quantity of varieties to choose from! The orchardists want kinds that will sell when grown. New Jersey is between two great cities; she is near the southern limit of apple production, and she has a great market east and north in the early summer. Few apples are wanted when there are peaches, and peaches fill the market during August and September. The eastern market holds until the first of September, and the northern market for the South holds for July. If planting, I would commence with the Pimate, a medium-sized tart apple, that is ready to pick about July 15th to 20th. It is seldom a heavy bearer on account of being so hard to fertilize. The tree when young is one of the unworked growers, short and stubby. It is one of the most profitable apples.

The Early Ripe is a good, upright grower and produces a crop alternate years. The quality is good and all the fruit of salable size. The fruit hangs well to the tree. If it were a week earlier, it would be the first choice; as it is, it comes second.

The Alexander is a winter apple. I see we shipped this variety July 25th, 1903. It is a large red apple, and must be sold as soon as it colors, as it specks while on the tree.

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The Hagloe is not so high colored, but the quality is better. It is a strong, upright grower and ripens the same time as the Alexander. These four apples I would plant, if planting for market, in preference to all others.

A few trees for local market or home use are Howthornden, a slow grower of same season as the Maiden Blush, but more productive; the Townsend, the Gerretson, the American Summer Pearmain. The last ought to be in every amateur list. Cornell's Fancy, for market; all are good apples.

For September the Baldwin and R. I. Greening are as good as any. Smoke House is one of the best early fall apples for market or home use. It is early to bear and will sell as well as any. For winter the Green or Newtown Pippin is probably as good as any. We have a tree that is nearly seventy-five years old and is producing well with ordinary care, each alternate year. The fruit sells better than most kinds. The Smith's Cider is the most productive and earliest bearer. This tree will break down with its load of fruit, and start out a new growth and make a new top; about as good as any for table or kitchen. But alas! the phyllosticta has it in its iron grasp, and unless something is found to kill the fungus, we had better plant something like the Newtown Pippin, that is as yet free from it. New Jersey ought to grow early apples for profit.

Mr. Charles Black—Friend Blackwell recommends the Primate. In our section it is one of the worst we have. We have the Yellow Transparent that ripens earlier. It is a far preferable apple with us. For a second early apple the Early Williams is good. While the tree is a very poor grower, still if grafted on a healthy growing stock like the Northern Spy, or the Baldwin, or even the Ben Davis, it is one of the most profitable apples to grow on warm, sandy or gravelly soil. Mr. Blackwell recommends also the Newtown Pippin. On the light, sandy subsoil the Newtown Pippin is very poor and does not give satisfaction. The Ohio Pippin has been grown largely in our section. It is like the Newtown Pippin and can be sold at any market for it. I would not recommend the Newtown Pippin at all on light sandy soil, as it is very unsatisfactory, but on Mr. Blackwell's soil it may

be all right. The tree is an inferior grower and the apple is very unsatisfactory, unless one has very strong subsoil.

Mr. Brown—I would like to say a word on this paper. It is a very able paper and very many good points have been brought out. We grow apples very extensively on the Delaware Peninsula. In the matter of pollenization I am very much surprised. We have found by experience, in setting different varieties together, that we get more productive trees and more sure annual croppers. We are planting our orchards largely in that way. Again, I am somewhat surprised at the variety of apples recommended. Of course we all understand that location and soil make a great difference, but with us the early apples that are profitable are the Yellow Transparent, the Fourth of July, and the Williams' Red. We grow principally early apples. The Early Ripe is a better apple than the Early Harvest. It is like it, only the tree is a stronger grower and the fruit more uniform. We have found in late years the apples that bring money are the Yellow Transparent, the Fourth of July and the Williams' Red. The Early Transparent can be picked when three-quarters matured and put upon the market, and that is where we get our money. They have brought more money in our shipping to London than any others. The Fourth of July is superior to the Astrachan and is a better tree. One can pick the crop in three pickings, whereas the Astrachan will take thirty days, for when the Astrachan is nearly ripe, about the time we try to catch hold of it, it falls to the ground. The union of the stem to the branch is very poor and the fruit drops. The only objection we have to the Williams' Red is that they grow a little too large, and if we can get them about the size, or a little larger, than the one Mr. Black showed, we would think very much more of them. But the Williams' Red is a money maker. The Newtown Pippins have been very successful, and since we put them in cold storage we get more money out of them, simply because they have a higher quality.

Mr. Charles Black—One advantage of the Yellow Transparent is, the tree grows lower; it can be planted on very light soil. It is not profitable to attempt to grow early apples if a man has a heavy, retentive soil. The Yellow Transparent will do very

well planted 20 feet apart, and will begin to bear when it is about six or seven years old. A friend of mine near Allentown has some 300 or 400 trees. They are just bearing and are very fine. He sold the fruit in Trenton and shipped it in boxes to New York. It will not handle well. The beauty of the Williams' Red is that it can be shipped when perfectly red, for it is perfectly firm and sells higher in the Boston market than any other apple. When a Baldwin is up six or seven feet the Williams' Red is not more than three or four feet high.

Mr. Roberts—Before we pass the subject I would like to add one apple to the list of early apples, and that is the Star. I move that the paper be referred to the Executive Committee, and that a vote of thanks be tendered Mr. Blackwell. Motion carried.

Peaches in South Jersey.

JOSEPH BARTON, Marlton, N. J.

When I consented to come here and talk on "Peaches in South Jersey" it was with the idea that I should enlarge upon the possibility of peaches in South Jersey; that is, what we can do, rather than what we are doing. About a generation ago there were a good many peaches grown in South Jersey. They were wiped out by insects and disease and were given up. Later they were taken up again, but the few planted fell victims to the scale when it first came out, before there was any known remedy. Since that time there have been comparatively few planted.

The peach industry in South Jersey is a negative quantity, and as a community or as individuals, we do not profess to know how to grow peaches. In some sections a limited number of growers make peaches quite an item in their business, yet in no locality does it assume proportions of great commercial importance. Just why this is so it is a little hard to understand, because our soil and climatic conditions, and more especially our market advantages, are very good. The soil conditions, you all know, are good. On good white potato soil we get the large tree, capable of producing large quantities of first-class peaches, and on that soil

the industry is very profitable. On our deep, sandy soil there is nothing that will pay better than peaches. We get a higher colored article and the quality is good.

I do not believe there is a section in South Jersey that would not grow peaches, but ordinarily good, loamy soils are capable of producing a large tree, with the capacity for giving a large quantity of first-class fruit. This character of soil makes handsome returns. While our deep, sandy soils—the soil that is of little value for the staple crops—will produce fruit, in smaller quantities to be sure, of the highest eating and selling qualities—fruit that will compare favorably in size, flavor and color with any mountain fruit. I wish to emphasize the fact that these sandy, semi-barren tracks of South Jersey sand can be turned into profitable investments through the agency of the peach. If the trees are sufficiently fed, the natural deficiency of plant food being furnished, the results are most gratifying.

Our climatic conditions are, in the main, favorable, yet we can not, except on deep sand, compete with the fruit from high altitudes in respect to high coloring. We are too flat and our air drainage is not equal to hillside location. This, in addition to our damper atmospheric conditions, renders our coloring a little deficient. Realizing fully the seriousness of this handicap, yet I think it not sufficient to condemn the industry.

When it comes to the opportunities of disposing of our peaches, we are equal to any and head and shoulders above most localities. First, we have as good a wholesale and retail market in Philadelphia as anywhere in the East. Here, of course, we simply come into the open market and are brought into competition with the best fruit of all the district. But in addition and apart from this, we have a vast opening for good peaches in a local way. Our advantages in this line are exceptional for various reasons. In the first place, as I said before, peaches are a negative quantity in our part of the State; consequently, the few growers there have practically no competition. There is not enough home-grown fruit to make the competition interesting. Secondly, immediately surrounding Camden, within a radius of ten miles, we have numerous suburban villages and towns, such as Had-donfield, Moorestown, Collingswood, Merchantville and a host

of others. These are good markets for a fancy article, and a home-grown article appeals to them in an especial manner. It has an anchorage on them which far overbalances any lack of color. And why? Simply because our fruit is better than a shipped article. It is better because we place it on the consumer's table within a few hours of the time it leaves the trees. Consequently, it is thoroughly ripened on the tree and a full degree of perfection is attained. How quickly the trade recognizes these facts! Moreover, how glad it is to pay for the extra quality!

In catering to this local trade nothing is more beneficial than a complete system of advertising. If you have a good article let the people know it. Last year, at the beginning of the season, in conjunction with a local dealer, we put out our circulars and left one at every house in the town Haddonfield. In addition, we advertised in the local press and held a small exhibit. What was the result? We simply captured the town on the peach question. Barton's peaches brought more by 15 per cent., right there four miles from home; than they were worth on the open market. Of course, there was a lot shipped in to Philadelphia, but I think we sold as many in Haddonfield as all the rest put together.

I do not know in what way to give you a better idea of what can be done than detailing our own experience. Of course you must understand that this is limited. Nobody has been doing it any length of time. We have not had time to see all our theories pan out. Seven or eight years ago we set out the first orchard of any size. Since then we set some out every year and now we have about fifty acres in young trees.

In the matter of setting out trees—the first essential is the tree. I want the largest tree of its age I can get. In the matter of trimming, our whole theory is to have a low-headed tree, headed down rather than in. I do not want close-heading, but a free circulation of air and plenty of sunshine.

In regard to the spraying, we find what Professor Smith recommends is absolutely true. Lime, salt and sulphur wash answers every purpose, and I think we are cleaner than we were three years ago. The scale had a pretty good start, but we have cleaned up the old trees through the agency of salt, lime and sul-

phur. We are not bothered with the rot; we probably get along with that better than you do, on account of our soil.

We make a big point of trucking. In setting out our orchard the first year we run trucking crops in it, such as sweet potatoes and cantaloupes, that require a light cultivation. Then the third year we put in something that ripens sooner. After that we cultivate the trees and not the crop. This cultivation enables us to get the big rank trees after two years, and then, of course, we are satisfied to take it easy.

The vital question is the picking and harvesting. I believe the smaller the package the more money secured. The fruits shipped in small packets realize more. Always have a nice, attractive package, especially in the local trade. One wants to get his local reputation very high, and a package should be done in a thorough and careful manner and always uniform.

As to varieties we place the Elberta head and shoulder above everything else. We have been able to realize in the last three years about \$1,000 per acre from the Elberta. That is ahead of the returns from any other variety. It is a good, uniform peach and is used extensively for canning purposes. The Elberta is good, if it stays on the tree until thoroughly ripe. It will not stand picking a little earlier for shipping, but for fruit picked for the local market, the Elberta is good enough for any one. It is a good, sure cropper, a pretty thing to look at, and a good seller.

After the Elberta the Fox Seedling comes next. Those are, of course, the ones we tried. The Fox Seedling gets a good late market. In addition to that we get a good return from the Old Mixon and the Mountain Rose. The latter is, probably, one of the best early peaches, but comes in competition with the Delawares, and the market never rules as high. We are setting quite a lot of new varieties which we have never tried; for instance, the Belle of Georgia, the Greensboro and the Champion. As I said before, we compare everything with the trucking business of the country, and taking these peaches, in a comparison with the trucking, we find we are able to make more money than out of truck. The last four years we have obtained about \$750 per acre off the peach trees. We cannot come up to that with

trucking. During the last four years we have had only one failure, and that was in 1903, the buds being killed by frost.

If we can keep the scale in check, I think the growing of peaches is a good thing for South Jersey.

Mr. Black—You prefer the largest trees. Have you ever experimented with the smaller, medium trees? What you say about cutting trees down well is all right. Take the small trees, two and a half to three feet, and they are near the ground. After a long experience with hundreds and thousands of trees, if I were going to plant an orchard, and a man would either give me large trees, or I would have to pay for medium trees, I would pay for medium ones.

Mr. Barton—We have never used the small trees. It always seemed to me that a good big tree, with a good root system, is capable of growing into a bigger tree.

Mr. Black—You will find the medium tree will give just as large a tree.

How to Preserve Our Small Fruits From the Robins.

E. S. BLACK, Hightstown, N. J.

Mr. President and Members of the Society: Permit me to make a few preliminary remarks before reading my paper. In the first place, I notice that the *Trenton Times* says I have long been an enemy of the robin. As its representative is here I hope he will change the expression and say I have long been a friend of the robin. "Whomsoever the Lord loveth, he chasteneth."

A gentleman in this room put in my hands some figures that must have been along the line of what we were told this morning was taught in the schools. He must have been at some Agricultural College where some professor was his teacher. He figured out that one pair of robins and their offspring ate in one season 382,320 insects. The estimated worth to the farmer of this pair of robins and offspring is \$38.23.

I make the assertion that there is no set of men who are greater friends and greater protectors of birds than the fruit grow-

ers. There is no industry in the world that makes a man kinder to his fellow-man and kinder to the dumb creation than the fruit growing industry. I heard it once said that "all horticulturists have big ears, big hearts and liberal minds."

Your Executive Committee has requested me to write an article on "How to Preserve Our Small Fruits from the Robin," and to offer some suggestions or outline some plan whereby we can ripen and gather our fruit before it is destroyed by the robin.

I presume that all fruit growers are lovers of birds and that they would hail with delight any plan to make it possible to have both bird and fruit. The theorist and sentimentalist contend that the robin lives chiefly on insects, and that only a part of its food consists of fruit; while in truth we find our fruit has disappeared and that there is an overabundance of insects. Taken from the practical view alone, the short answer and easy solution would be, "Exterminate the robin."

The up-to-date fruit grower, the man who is in love with his work and does it because he is in love with it, as well as to get his living out of it, is and must be in close touch and communication with nature and with nature's God. He sees in every flower, in every herb, and in every bird something to admire and something to care for. He is quick to discern every plant, bird or insect that will be for his profit and pleasure, and to cull out those that are harmful to him. He must not be a theorist, but a practical, wide-awake man. He cannot get at his work about 9 A. M. and quit at 3 P. M., for on every side, from day's end to day's end, night and day, his foes assail him; insects innumerable and insects unnamable, birds and weather—all are against him. The transportation companies, the package manufacturers and the commission men consider him an easy mark, and part of his wits and time must go to look after their interests as well as his own. No class of men is more generous toward their fellow-men or more humane and merciful toward beast, bird, reptile or insect creation than those engaged in horticulture. Their work brings them in close touch with man and with nature. The horticulturist knows full well the birds, reptiles and insects that are his friends and those that are his enemies. The wheelbug, the ladybird and the wasps prey on injurious in-

sects; the toad, frog, turtle and many of the snakes live chiefly on insects, and are friends. Among the birds considered harmful and upon whose lives the laws of many States have put a price, he shares his profits. Crows and blackbirds flock around by the thousand. The despised English sparrow is still with us, against whom for years has been the law, the boy, the cat, and the sentimental bird lover. The law put a price on his life; the sentimentalist, forgetting his great love for one of His creatures, demanded his destruction merely because he is not over particular about his roosting places, using the portico of the city mansion or the porch of the country farm-house. No difference to him does it make whether food is scarce or plentiful. To him it matters not whether there be flowers or leafless trees, sunshine or blizzard; whether the earth be green or snowclad. He is always with us, summer and winter, no more destructive, and as active and pretty as the robin; yet the bird lover (?) hates this plebeian and invokes the law to his aid in its extermination. The robin, to be where fruit abounds, summers in the north and winters in the south, and having adopted their customs, becomes one of the patricians and is of course a true creature of God. God and the law are invoked to protect him in the north in the summer, but when he migrates to the south men are allowed to destroy him for food, sport or profit. Oh! Consistency, thou art a jewel, and thy name is not—Bird Lover.

The horticulturist is, on the other hand, sure of his ground and is consistent. He asks, not for the extermination of any species of birds, but for the protection from excessive numbers of destructive birds that are of no practical benefit to the State at large. They always have been and always will be friends of the robin or any other bird, and will protect them because they are a part of that great plan—the beautiful in Nature. For the blue bird, the marten, the wren, the barn and chimney swallows, the king bird, the peewee, the woodpecker, and for the only bird that I ever knew to eat hairy caterpillars, the cuckoo, as well as many others, there is an innate love and sentiment which prompts him to not only protect by law, but also to encourage by such devices as bird houses and nesting places for comfort and safety from cats, hawks, and inclemencies of weather; all this because of his love of the beau-

tiful and not for any practical benefit that these birds are to him. Sentiment rather than usefulness must be the only plea for the reason of the act, and none of us are strict utilitarians, as we are not so constituted. With all this protection the birds have proven to be of no practical value and we find that, much more rapidly than the birds, the insects increase.

The horticulturist whose business it is to grow fruit, and incidentally make enough to support his family, is seldom a mercenary man. His is a labor of love, and he knows that the money given him will be saved from the doctor's bill. The child who eats an abundance of red, ripe berries and apples will have red cheeks and rich, red blood, both of which are more beautiful and more cherished than the red breast of the robin. In my house there is a picture entitled "The Two Majesties." A lion is sitting on a rock looking across a sheet of water at the rising sun. The lion, the majesty of the night and of the whole kingdom of dumb creatures; the sun, the majesty of the day and all life, are both greatly admired, but you and I would not hesitate a moment if asked for our choice. In my mind there is another picture; let us name it "The Three Divinities"—a strawberry, ripe and luscious; a robin and a child. The strawberry is a divinity among fruits, the robin is a divinity among sentimentalists, and the child a divinity above all others in the kingdom of God. The berry is valuable as a food; the robin will take it, unless prevented, to paint his breast, but the child needs it to bring back to its cheeks those beautiful tints that denote health. I love the one and admire the other; hence, the child must have the berry.

Those who have allowed sentiment to prevail over their better judgment claim that the cheerful notes and beautiful plumage of the bird should procure for him the freedom of the berry patch. The robin will always eat wild fruit in preference to cultivated, and will leave a tree of choice cherries to fly to a tree of an inferior sort when told that it was planted especially for him. That is, Mr. Powell's robins will, for they are New York robins. Even where there is no poor fruit, and if you will only plant enough of the good, the robin will strictly confine his depredations to that part of the fruit set aside for him. Professor Forbush has that kind of robins in Massachusetts.

Both species differ from the New Jersey robin (it may be that only those of the very best families care to summer with us), for in our State they prefer the very best; and to make sure that they get it, they eat all.

The special claim set up by the advocates of an absolute protection for this bird is, aside from his place among the beautiful things in nature, that his insatiable appetite for insects and caterpillars places him in the list of indispensables to the agriculturist and horticulturist, and that, without this bird to protect them, the increase in insects would be so great as to make it impossible to grow any crops. If this is true, we ought to know it at once. Consulting the highest authorities for this information, Dr. T. S. Palmer, of the U. S. Biological Survey, in the year-book of the agricultural department for 1899, says that in 1858 Prof. Jenks made the first investigations along modern lines in studying the food habits of the robin. Examining the stomachs through the year, March and April stomachs contained only insects, 90 per cent. consisting of the larvæ of crane flies; from May 1st to June 21st these larvæ were not present, but in their places were caterpillars, beetles, spiders, etc.; from June 21st till October there were found strawberries, cherries and other fruits; after October there were grasshoppers and similar insects, and the few birds that remained over winter lived on the wild berries of trees and shrubs. Dr. Palmer relates a more interesting experiment made by Prof. Treadwell, who caught a young robin and fed it on earthworms. On the fourteenth day it had consumed sixty-eight worms, the weight of which amounted to 41 per cent. more than that of the robin. Figuring from this, a brood of four would eat 250 worms per day, and for twenty days for this one brood it would take 5,000 earthworms to furnish them with food. Each one of these worms has a greater work to perform for man than that of filling the mouth of the robin. The earthworm goes down deep into the earth, perforating it and letting in the air. When he comes to the surface, he brings up valuable materials and deposits them near the surface, available for the plant. For beauty, the bird is preferred, but for utility the worm is vastly more valuable. In this same report of 1899, Prof. Beale, in speaking of

insect-eating birds, says: "The prevailing idea that all insect-eating birds are beneficial may require decided modification. There are birds that feed habitually on beneficial insects to such an extent as to lower their value, if not to make them enemies of our crops." Our own Dr. Smith says, in his report of 1903, that he has carefully studied the available records of the food habits of the robin and there is not a single insect that the robin eats that cannot be kept in check by spraying. He further states that guineas, chickens and turkeys will eat as many injurious insects, but not so many beneficial ones. As to the orchard pests, the Doctor says that the horticulturist gets absolutely no benefit from the bird, but must depend upon spraying. It seems strange that Dr. Palmer should go back to Dr. Jenks' experiments in 1858, when all the conditions were very much different from now, a half century later. Had Prof. Jenks examined the stomachs of the farmers and their children at that date, he would have found, not wheat bread, beefsteak, plum pudding and champagne, but rather 90 per cent. of rye bread, potatoes and pork, and 10 per cent. of mush and milk, varied during the winter by substituting buckwheat cakes for rye bread. The boy, the farmer and the robin depended upon wild fruits for any change in their diet. Fox grapes, wild strawberries, blackberries, huckleberries and mazzard cherries in summer, and juniper, privet and bay berries, and frost grapes in winter were more plentiful than healthful. Thousands of acres of land were overgrown with trees and shrubs, and the robins being able to get their natural food, fruit, did not go south to get it, but finding it here remained during the winter until these lands were cleared up to make room for towns, villages and cities, and to-day even the fence rows have been cleared to protect from scale infestation, leaving him no feeding grounds, and he bids us farewell until our fruits come again in the summer.

For the farmer and laborer, as well as for the millionaire, the wild fruits have passed and nothing but the largest, best and finest-colored productions are satisfactory. All classes of Americans demand and have the very best food and fruit obtainable. No one who is able to earn a wage at all would sit at a table fur-

nished as the farmer's table of fifty years ago. Everything is better provided for now; the eye and palate of beast and bird have kept pace with the "lords of creation." Even the pigs must have their apples sweet and well-ripened before they will eat them, and with all this advance the robin has kept pace. He wants the very best to be had. He has not only kept pace with the farmer in his taste for better food, but also in his ideas of building and home furnishings. For, while straw, sticks and mud once served him as material for his nest, the housewives say that he now steals their lace collars from the grass, when left there to bleach, and uses them for his home furnishings. During the past five years we have had many freak kinds of robins described to us, but to the initiated they are but the maudlin dreams of a sentimentalist. For, who can imagine a robin looking contemptuously at your cultivated blackberries as he hies him away to his native woods to feed on the wild blackberries, or see him, scorning the large ripe cherries, fly past them and into the dear blackheart tree just across the road? Who can think of that robin disdainingly partake of those specially valuable strawberries and reveling in the small wild berries in the fence row, or if he should alight to get that particular delicious morsel of a white grub, would you suspect him of stepping aside to avoid injuring the delicate berries so near at hand?

Only the professor in his laboratory, with a theory and a salary before him, can figure out good results from the robin for the fruit grower. Protected by law, they have increased by the thousands, and instead of being a blessing they are not only a nuisance but also a positive damage and menace to the industry. Their depredations are not confined to the small fruits, but plums and pears are attacked as well.

Dr. John B. Smith's report for 1903 gives a long list of insect enemies. Lice of all kinds, San José and other scales, insects that bore in the roots and stalks, moths, caterpillars, weevils, fleas, beetles and bugs were named and described. He tells what crops they infest and destroy, and it seems that nothing was immune. To see if he could not make life more miserable, he magnanimously chucked in at the last that noble songster, the mosquito. Everyone knows that the robins were here in tens of thousands,

and if it be true that 60 to 90 per cent. of their food consists of insects, surely this bill of fare that the Doctor has made out ought to have been a feast for the gods. But what does the Doctor recommend to destroy these insects? Robins? No! no!—kerosene, crude oil, lime, sulphur and salt, and other concoctions and combinations less costly and more efficacious than the robin. For, in spite of the wonderful appetite of that bird, we have an ever increasing number and list of insects. This, in view of the increased number of robins, proves that we must depend upon artificial and scientific methods to rid us of our insect enemies. Therefore when crediting the fruit grower with the fruit he has shared with the robin, charge it to public charities, but never to value received.

No attempt will be made in this paper to give statistics of the amount of fruit grown, marketed and destroyed, nor the damage done by the robin; such data could be procured only by a careful canvass of the entire State. In my own vicinity in the past few years the destruction of fruit has been so enormous as to reach into the thousands of dollars. No one, except those affected, can ever understand it until they are in the same business. The result of this heavy loss is a demand for protection. The fruit grower must have that protection, or go out of business. He can not protect his crops with netting, nor can he put cords with streamers around his fields and orchards, shoot with blank cartridges, or hire boys to walk about the place and try to scare them away. All such schemes are nonsensical and impracticable.

While life and liberty is precious to all living creatures, and the law cannot throw too many safeguards around each life for its protection, yet when that life becomes a menace to other lives no sane person would ask a law to protect the wrong doer and thereby oppress the innocent victim. A man having the opportunity to steal *only* one hundred dollars is arraigned and brought before the jury, and in his possession is found that money and with it \$200, which was honestly earned. His counsel pleads that, having in his possession more honest money than stolen, proves his earning capacity to be greater than his stealing propensity, and presents to the jury a list of petitioners made up of children, many of whom have never seen him except in books and

papers, and none know anything about him except that he struts around and wears a pretty red vest. This petition asks for the release of the man and his protection from the law ever afterward, no matter what his crime. Should any judge allow such a plea and petition, and should any jury acquit on such an argument, he would be scorned and ridiculed by every thinking person in the country. Yet this was about the argument put up by the advocates of the robin. They claimed that he ate insects, and proved that he did when there was no fruit, and never attempted to say that he did not eat the fruit. They argued that he would eat wild in preference to cultivated fruit, that he was such a pleasant sight to have around in the spring and that his beautiful ways please the children, if they ever happen to have the chance to see him. One assemblyman presented a petition, signed by several thousand school children, to the astonished law-makers of our State asking them to prevent the fruit-growers from protecting themselves against this thieving bird. This was the most ridiculous nonsense that was ever used to influence legislation, and more ridiculous still is the fact that it worked. Most of those child petitioners would have signed any petition, even one to kill the robin if the right person asked them in the right way. No teacher or officer has any right to ask any child to sign anything of the kind without first presenting the matter to the parents. The law-maker does not consider a child capable of voting until 21 years of age, and if the child is a feminine it is never old enough. That assemblyman received his just deserts when his constituents decided to leave him at home until he was old enough to put away childish things.

The newspapers, as a rule, are on the side of fair play and justice, and it is but natural that the legislators reading them take their opinion as an index of public opinion and act accordingly. On this most important question, however, the papers have allowed sentiment and sentimentalists to warp their judgment, but the editor will soon assume his natural position as arbiter rather than censor among the affairs of men. His hatred of injustice and wrong-doing against man or beast, and his love of equability will soon put him on the side of the fruit-grower, and he will de-

mand for them what all men have a right to expect—that is, “a fair fight and an open field.”

At the last meeting of the Board of Agriculture a gentleman of note in the dairy business said, with fine sarcasm, as a clincher to an argument in favor of the robin: “Now, I do not know that we are a great deal wiser than the Great Maker of all this animal life. I do not know that we can run this creation a great deal better than He could. At all events, it has never been found out or enacted in any State I know of.” Aside from the sarcasm, this gentleman was perfectly right, and yet he did not know it. In the book of Genesis, first chapter, we find the law laid down by the Great Maker and Law-giver himself: “And God said, let us make man in our image, after our likeness, and let them have dominion over the fish of the sea and over the fowl of the air and over the cattle and over all the earth and over every creeping thing.” And God said, “Be fruitful, multiply and replenish the earth and subdue it.” This was the law as laid down at the creation of man and must pass unquestioned. No State may have enacted any law worded just like this, but every law yet put upon the statute books was passed by man, and when found wrong according to the Great Law must be by man modified or stricken out to suit present conditions. Adam had no scale to contend with that we hear of, but the present generation passes laws to kill the God-given life in that scale. Adam had troubles because his wife took the forbidden fruit and she suffered the consequences, and if to-day a robin steals the fruit, why should he not be equally culpable and therefore suffer. Earth and all its creatures were made for man, and he is made arbiter of his own affairs. Everything must subserve to his wishes and his wants. This was the first law and has always been the common law, and man must use his own best judgment and not be unduly influenced by sentiment.

By going back to the first principles of the right of ownership, and the right as well as duty to protect himself and his property from the invasion of man, beast or bird, there was enacted in New Jersey in 1850 a law that proves that the lawmakers of that period have not been improved upon since. This act was entitled “An act to prevent the destruction of small and harmless birds.” It reads: “It shall not be lawful in this State for any person to

shoot, or in any other way to kill or destroy, *except upon his own premises*, any of the following birds." Among those enumerated was the robin. This is all the law we want for any game, bird or animal, and such a law we will have before long. With such a law there can be no complaint of extermination of the robin. The loafer and the wanton killer is prohibited. The robin and all game would be in the hands of their friends, and both would get fair play.

Therefore, here is the answer to your query, "How to preserve our small fruits from the robin." Let its strong common sense speak for itself—so brief that it can be retained in the shortest memory, so simple that it can be understood by a child. This is the law proposed: "No one shall shoot or destroy any of these birds, except on his own premises." With such a law there cannot be the least danger of the extermination of the robin. No one wants him exterminated. All that is wanted, and all that is asked, is a protection against robbery, whether the robber be man or bird. This is a God-given right guaranteed in the creation to all men and in the constitution of this country to all its citizens.

Mr. Black's paper was frequently applauded and at the close a vote of thanks was extended to him.

SECOND DAY—AFTERNOON SESSION.

President Skillman—The first thing in order will be the question box.

Fourteenth Question: Are peach trees that were frozen last winter worth fertilizing and spraying?

Mr. Charles Black—That is according to how old they are. I have some seven or eight years old. They have borne several crops. When I examined them the majority of them were more or less frozen and dead, but I am now taking them out. If a

man has a young orchard, 3 or 4 or 5 years old, and in good condition, I would fertilize them, if there is vigor enough in them. If there is not they had better be taken out.

President Skillman—Then I understand if they are not too badly frozen you would let them stand?

Mr. Charles Black—If they are not too dead. If they made a vigorous growth last season they will grow over that frozen part.

Fifteenth Question: What is the best fertilizer?

President Skillman—What is the best fertilizer? I presume for peach trees. Mr. Collins can answer that.

Mr. Collins—I think a fertilizer that contains potash, and not too much nitrogen. If the trees are thrifty I would add more potash.

Mr. Charles Black—A good deal depends on the condition of the trees and the character of the soil. If it is sandy soil use stable manure or crimson clover. If you have no stable manure and are too poor to get crimson clover, use cow manure, potash and bone; any amount you care to put on will be good, if they are not too thrifty.

Mr. Vanderveer—The first year I put on stable manure around the young trees. The second year I put a special fertilizer for peach trees. The third year I sow my ground with crimson clover and plow that under. The fourth year I put on a bone fertilizer.

Mr. Charles Black—You can get too much crimson clover.

Mr. Vanderveer—My soil is a sandy loam and my trees look very fine.

Sixteenth Question: Does the stock affect the quality of the fruit that is budded or grafted upon it?

Mr. Charles Black—No, sir; if it were the case we would have, in planting 1,000 Baldwin trees, 1,000 distinct varieties, because there are scarcely any seedlings alike.

President Skillman—It will affect the growth and habits of the trees, will it not?

Mr. Charles Black—Not much. The stock has more influence

on the root than the root has over the stock. For instance, take the Rambo apple. Examine it, and invariably one or two roots grow down, and that is about all it had. When we put Spy or Baldwin on the same stock, they form a perfect root system.

Mr. Roberts—I would not be quite as positive as Mr. Black, I would say that everything affected it more or less.

President Skillman—Mr. E. S. Black, we would like to have your views on that question.

Mr. E. S. Black—I would say sometimes “Yes,” but mostly “No.” The climatic condition and especially the soil will have more to do with it than anything else. You heard what Mr. Blackwell said about grafting or budding of any kind. Mr. Blackwell has apple land, or land that will grow apples. You may remember, Mr. President, that Mr. Blackwell’s brother, last year or the year before, had samples of Smith’s Cider grown on rich river bottom land, and others that were grown up on the hilly land. Those that were grown on the hills were as red as could be, and the others were a dull greenish red.

President Skillman—We know it will affect the color, but does it affect the quality?

Mr. E. S. Black—The soil will have all to do with the quality.

President Skillman—It is a case where doctors differ.

Seventeenth Question: Does fumigation injure trees?

Mr. Roberts—Generally, it does.

President Skillman—Mr. Collins, does fumigation injure trees?

Mr. Collins—I do not think it would in an ordinary or proper way.

President Skillman—It is possible to injure trees by it?

Mr. Collins—Yes.

Mr. Charles Black—A tree can be killed with fumigation, the same as a doctor can kill a man with medicine; still people take medicine and they think it helps them. I do not think fumigation is much help to trees.

President Skillman—The question is, does it injure trees under any condition?

Mr. Charles Black—I would not say that the tree was any

better, but I would say that when it is properly done the effects are so slight they are not perceptible. I would rather take the chances of fumigation than I would of the San José scale.

Mr. E. S. Black—It would depend upon the length of time it is subject to it. The condition of the tree will have something to do with it.

President Skillman—Then it does, under some conditions, injure nursery stock?

Mr. Charles Black—The trees should not be wet, but dry when fumigated.

President Skillman—The consensus of opinion is that it does, under some conditions, injure the trees.

Mr. E. S. Black—It will under some conditions, in the hands of people who do not know how much fumigation to give. The same as a doctor could give you a dose of arsenic, if he understood it, and not kill you, and he could give you enough to kill you.

Mr. Roberts—It injured my trees for me, because I have planted trees that have been fumigated and all died. A tree that has been fumigated is damaged, and I would not give nearly as much for it. I want trees without fumigation if I can get them.

Mr. Charles Black—There are instances of trees dying before they are fumigated from some other cause, and we cannot lay it all to fumigation.

President Skillman—But you admit that it does injure trees under some conditions?

Mr. Charles Black—Yes.

Mr. Corwin—Would it be in order to ask if scabbiness in potatoes can be controlled, if potatoes are planted on the same ground as they are on Long Island?

President Skillman—That question was not answered.

Mr. Corwin—I have a limited amount of potato ground which I wish to cultivate in potatoes in successive years, without an intervening crop. Will it be affected by scabbiness, or can that be prevented? My neighbors have very much scabbiness. Will it produce scabbiness if planted on the same ground year after year?

Mr. Black—If you plant potatoes on ground that produced

scabby potatoes, you will be pretty sure of having it again, and I would not advise planting on that ground for two or three years.

Mr. Corwin—How do they do it on Long Island?

Mr. Charles Black—They do not get the scabiness.

Mr. Roberts—Experiment Station men have told us that certain acid conditions of the soil do away with the scab. So if you raise crimson clover, or any other crop, and get the soil in an acid condition, you will have very little trouble from scabs.

Mr. Joseph Matlack—If the gentleman will plant rye after he digs his crop of potatoes, it will sour the soil and get it in an acid condition and help his crop, and every crop might be cleaner. If he spread lime on that soil he will get scabby potatoes.

Mr. Charles Black—Lime or wood ashes will surely bring the scabs. If the soil be thoroughly infected by scabs, there will surely be scabs next year.

Mr. Matlack—I asked one of my neighbors if he would allow any man to come on his farm and lime it, and he does not plant potatoes every year. He said he would not allow it if it were done for nothing.

President Skillman—You will pardon the chair for expressing an opinion. I know of some one living near me who has grown twenty-nine crops of round potatoes in twenty-nine consecutive years, on the same piece of ground, and all the fertilizer of any kind that has been put on was simply stable manure. I know that to be a fact, and I can produce affidavits to that effect. When he dug the last crop I was there and the crop was a marvel. The ground was, figuratively speaking, covered with elegant potatoes.

Mr. Charles Black—But were they smooth?

President Skillman—Yes.

Mr. Charles Black—If he had one crop of scabby potatoes he would be done for.

Mr. E. S. Black—I am not a potato man, and I do not know very much about them. I know we do not get very big crops, but we do not plant very many. There was a man at our place a few years ago talking about potatoes. He lived back of Princeton in the hilly region, and he said he always had a fine crop of potatoes, because he limed his land and never had any scabs. I

told him all the doctors would disagree with him, for they say we must not put lime on the land. So you see there are different conditions of the soil, and we cannot recommend anything for two different men. Along the shore in Monmouth county, where the men only have small farms, they plant potatoes right along and do not grow any other crops; there is very little trouble with scabs. I planted potatoes on land where I do not suppose there were ever potatoes before, and I have had lots of scabs.

Mr. Charles Black—It is the condition of the soil, but still it has been the practical experience of potato growers for years that it is unsafe to lime potato land before planting. A few years ago I had a piece of land that I limed over and intended to put corn on it. I changed my mind and put potatoes there. I had had potatoes there before, and always pretty smooth ones. In the clear-up, where the soil was thrown out each way, the row of potatoes that came right down in that furrow were the only smooth potatoes in that field. There was no lime there, but we had no potatoes of any consequence. It would not be safe to plant potatoes on limed soil.

President Skillman—Is the Nominating Committee ready to report?

Mr. Vanderveer—The Nominating Committee would report the following names for officers of this Society for the ensuing year: (Printed on pages 3 and 4.)

Mr. Roberts—The Auditing Committee have examined the Treasurer's accounts, compared them with the vouchers, and have found them correct.

On motion the report was received and adopted.

President Skillman—There is a committee to look after the visiting delegates. If any of those delegates are here I wish to say, at the suggestion of one of the committee, that their hotel bills and expenses here will be paid by the Society, and I do not wish the delegates to pay them. We had two, I think. Whoever was appointed a regular delegate, that applies to him.

Mr. Charles Black—I have a short resolution if you will let me introduce it:

WHEREAS, The list of members of our Society is very incom-

plete, by retaining names of members long since dead, and other errors,

Resolved, That a competent committee be appointed to revise the list or see that it is done by those whose duty it may be to act.

A motion was carried that the resolution be referred to the Executive Committee.

President Skillman—Now we will have the opening, by Brother Reid, of that discussion, "Should Fruit Trees be Kept Under Constant Cultivation?"

Should Fruit Trees Be Kept Under Constant Cultivation?

W. H. REID, Tennent, N. J.

The great advance in all lines of horticulture within the last quarter century, the amount of money invested, and the great number of people depending on it for a livelihood, combine to make the horticulturist give serious consideration to the various details of his business. Not the least among these is the subject of the cultivation of fruit trees. Whether to cultivate constantly, cultivate occasionally, or *not* cultivate at all—these are the questions. Each one of the three methods has its practical advocates, and in every one of the three classes we find successful fruit growers, but during the last ten years the horticultural writers and the horticultural speakers have, almost to a man, been advocating constant and thorough cultivation. We have noticed that when some very prominent writer or speaker leads off, strongly advocating certain methods or certain lines of procedure, the others straightway fall in line, and probably for a number of years all will be agreed, until their enthusiasm upon this subject has run its course; then the pendulum gradually begins to swing the other way. Is it wise for us to allow ourselves to be swayed entirely by their writings and sayings to the exclusion of our own practical knowledge and experience?

When your Executive Committee arranged their programme

the understanding was that I was only to open this discussion. On account of the attitude of most writers and speakers on this subject, and of many fruit growers also, I see no better way to provoke a discussion than to come out boldly in favor of the negative and say, fruit trees should *not* be kept under constant cultivation. In taking this position I wish to state that I am not doing it wholly for the sake of discussion, but that I am sincere and honest in my position and that I believe all the statements I shall make. This belief is founded wholly on my own experience and observation of the experience of others. The reasons for my belief are as follows:

First—That for constant cultivation the orchardist must, in order to allow teams and cultivating implements to pass under the trees, cut away many of the lower branches. This forces the growth to the upper branches and forms a high tree, which is considered a serious objection, as the cost of harvesting fruit from a high tree is from twenty-five per cent. to one hundred per cent. greater than from a low one. The injury from storms and high winds is very much greater, and a very much larger proportion of the fruit will be shaken and blown off; also, the fruit in falling from a high tree will, on account of the greater distance, be bruised and injured much more; as a result, a smaller percentage will be marketable. In addition to this the labor and expense of spraying is greater for a high tree than for a low one, and, in fact, it is almost impossible to do a thorough job against the scale on very tall trees.

Second—The cultivated soil is an objection, in that it causes all fruit dropping upon it during or before a storm to be soiled and muddy, and hence unfit for market, unless the extra labor of washing is performed; and wetting hastens decay. It is more difficult to haul fruit over soft, cultivated soil, and the packages are liable to become more or less soiled; also, if the orchard is on rolling ground, much of the soil will be washed away by heavy showers.

Third—In cultivating there will always be more or less injury to the trunks of the trees from contact with whiffle-trees and cultivating implements. This will happen occasionally with the most careful, and with careless help it will happen quite often, leaving

an opening for insect pests to begin their depredations, and possibly to start decay in the wood.

Fourth—Constant cultivation produces a heavy and abnormal growth of foliage, shading the fruit and causing it to be deficient in color. The most highly colored, the fairest and the most perfect specimens of apples that I have ever seen grew in non-cultivated orchards. It has been by observation that color, flavor and good keeping qualities go together, hence the superiority of fruit from orchards not cultivated. I wish to emphasize this particularly for late varieties intended for cold storage. Two years ago there were exhibited at our meeting in this building a number of plates of apples, with a card attached stating that they were grown without cultivation and without spraying. Those apples were the most highly colored, the fairest and the most perfect specimens exhibited at that meeting. At our meeting one year ago some plates of Baldwins were on exhibition that were so lacking in color that few horticulturists, under ordinary conditions, would recognize them as Baldwins. Those apples were grown and exhibited by a member who practices constant cultivation. In our own orchard are two rows of Pelicans, which, for reasons other than the good of the bearing trees, were cultivated at the south end of the rows. In harvesting those apples last fall we found that while the fruit on the cultivated end of the orchard was a little larger it was not as highly colored nor as fair as that on the trees in the sod, nor was it as valuable for market purposes or home use.

Fifth—The cost of caring for an orchard in cultivation is an extra expense over and above one in grass. This cost, including seed when cultivation ceases, we would estimate at from five to ten dollars per acre, depending on the nature of the soil, the number of heavy rains to be followed by immediate cultivation, and the weediness of the ground. It would seem to us that for economical production of first quality of fruit and percentage of net profit non-cultivation or occasional cultivation has a decided advantage over constant cultivation.

It is our belief that the best results from orchard management in our section can be obtained by constant cultivation till the trees have arrived at bearing age, then seeding to some grass

that will not make too tough a sod, mowing two or three times a year, leaving the clippings on the ground, and cultivating only when the trees cease to make enough new wood or when the soil becomes infested with weeds and foul plants.

Mr. E. S. Black—What do you mean by fruit trees?

Mr. Reid—Anything from a peach tree to the largest apple tree we can find.

Mr. E. S. Black—Then you would not cultivate peach trees?

Mr. Reid—I except peach trees, as I had no experience with them. My objection to the constant cultivation is the height of the trees. In order to do it constantly you are compelled to cut away limbs, and constant cultivation makes a very large tree, and that is a serious objection, as the cost of harvesting fruit from a high tree is from 25 per cent. to 100 per cent. greater than from a low one.

A Member—Would you prefer mulching to cultivation?

Mr. Reid—I am not prepared to say, I prefer it myself.

Mr. E. S. Black—These high-colored apples you refer to come from Sussex county and those high hills. I can take you to Mr. Henry R. Applegate in Hightstown. He is a great apple man, and he showed me one row of his orchard that he cultivated, and the ground of the orchard. He had left in seed about eight or ten acres, and he said he was satisfied he lost \$150 to \$200 on the place because of it. What is good for one man may not be good for another. My brother thinks we ought not to have any condiments in our food. Somehow I use salt, but I could do without pepper; I fare pretty well, so does he. That is the way it is, we cannot apply any set of rules to all things.

Mr. Vanderveer—Do you never pasture your orchard?

Mr. Reid—No.

Mr. Vanderveer—How would sheep do in that?

Mr. Reid—They might eat the low limbs. I like the apples on the low limbs, as they pay best.

Mr. Charles Black—My idea of cultivating an orchard would be to make the trees grow as fast as they can for ten or twelve years, and then make a hog or sheep pasture out of it, and I would not care if I had any cultivation or not. With no culti-

vation the trees become moss bound, and if left for two or three years and then cultivated they will not do so well.

Mr. Roberts—I would cultivate mine, as I am not converted.

Mr. Collins—I think I cannot raise apples satisfactorily without cultivating them, although I admit there are different soils and different results. I think Mr. Hitchings, who takes the ribbon at exhibitions more than any other man, never plows his ground, but mulches it a little.

Mr. Reid—Does any one deny that we get fairer and more highly colored fruit?

Mr. Charles Black—No, that is all right, as long as your orchard thrives and does well. It depends upon the soil condition a good deal; the trees will grow sometimes without cultivation. If the soil gets in a low condition, then cultivate. Hogs and sheep cultivate an orchard. I never was an advocate of letting an orchard go from year to year without either cultivation or pasturing with hogs and sheep. You can put in either one, but I prefer sheep. Very few Jersey farmers raise sheep, because they prefer to have dogs. If you could have enough sheep or hogs to keep the grass down low there would be no need for any manure or cultivation or ordinary soil, or anything else. They would soon eat up the codling moth.

Mr. E. S. Black—I know a man who had an orchard of Smith's Cider apples. He put out young trees; that is, the orchard had not been cultivated. It was in grass, and he went to work and cultivated it by plowing up the sod and keeping it well harrowed and in nice condition. The second year he told me he sold \$500 worth of apples out of that orchard, and the next year he had a little over \$500. The fourth year he went on the advice he had read in the papers of men who had been mowing the grass and letting it lay on the ground. He also applied a heavy coat of stable manure. After this he said if he had cultivated the whole orchard, instead of letting it go to follow some scientific fellow's advice, he would have been \$150 or \$200 better off.

Mr. Reid—What was the trouble with it?

Mr. E. S. Black—The trees did not get the size. You take the peach orchard of C. A. Bennett's at Robbinsville. In it are

set young apple trees. They are growing just as fine as can be, and he expects to cultivate it still more and apply more fertilizer.

Mr. Reid—In the varieties like Pippins and other apples in which color is not wanted, I believe in the majority of cases it is best to cultivate, but I cannot agree that in late apples it is best.

Mr. E. S. Black—I think every man ought to experiment and try for himself. Different soil will bring different conditions. One can pick up a boy out of the gutter and he will make a splendid man, but I would rather take my chances upon bringing him up in a good home.

Mr. Charles Black—I have no doubt that excessive foliage makes poor colored fruit.

President Skillman—Now we will have the report of the Fruit Committee.

Report of Committee on Display of Fruit.

CHARLES BLACK, Chairman.

Mr. President: Your Committee on Fruit Display respectfully reports about one hundred and seventy-five plates of apples and pears, fourteen jars of fruit, one vase each of violets and carnations. The exhibit is much the finest and largest ever exhibited at our Society's meeting. Your Committee has endeavored to judge fairly and do its duty as far as the limited time would allow. We award the following premiums:

APPLES.	FIRST PREMIUM.	SECOND PREMIUM.
Lansinburg, ...	W. H. Skillman.	
Ben Davis, ...	C. L. Andrews.	W. H. Skillman.
Lankford, ...	Lemuel Black.	W. H. Skillman.
York Imperial, ...	Barton Bros.	Lemuel Black.
Stark, ...	F. S. Weeden.	Lemuel Black.
Rome Beauty, ...	W. H. Morgan.	David Baird.
Smith's Cider, ...	John Repp.	Barton Bros.
Wealthy, ...	Lemuel Black.	W. H. Morgan.
Gideon, ...	Lemuel Black.	
Wagener, ...	Lemuel Black.	

APPLES.	FIRST PREMIUM.	SECOND PREMIUM.
Jonathan, ...	C. B. Hornor & Son.	Lemuel Black.
Sweet Wine, ...	Lemuel Black.	
Early Williams, ...	Lemuel Black.	
Ridge Pippin, ...	Lemuel Black.	
Stayman, ...	E. S. Holmes.	Lemuel Black.
Hubbardston, ...	W. H. Skillman.	Lemuel Black.
Paragon, ...	W. H. Morgan.	C. L. Andrews.
Grimes' Golden, ...	John Repp.	Lemuel Black.
Rhode Island Greening, ...	S. A. Miller.	Lemuel Black.
Fall Orange, ...	Lemuel Black.	
Tallman's Sweet, ...	Lemuel Black.	
Milding, ...	Lemuel Black.	
Ortley, ...	Lemuel Black.	W. H. Skillman.
Fameuse, ...	Lemuel Black.	
Monmouth Pippin, ...	Lemuel Black.	
Mann, ...	Lemuel Black.	
Newtown Spitzenburgh, ...	Lemuel Black.	
Esopus Spitzenburgh, ...	Lemuel Black.	
Walbridge, ...	Lemuel Black.	
Dickinson, ...	Lemuel Black.	C. B. Hornor & Son.
White Ohio Pippin, ...	Lemuel Black.	C. B. Hornor & Son.
Northern Spy, ...	John Repp.	S. A. Miller.
Canfield, ...	Lemuel Black.	
Red Bietigheimer, ...	Lemuel Black.	
Gravenstein, ...	Lemuel Black.	
Pewaukee, ...	Lemuel Black.	
Maiden Blush, ...	John Repp.	Lemuel Black.
Detroit Red, ...	Lemuel Black.	
Pound Sweet, ...	S. A. Miller.	Lemuel Black.
Cooper's Market, ...	W. H. Skillman.	Lemuel Black.
McClelland, ...	Lemuel Black.	
Shackleford, ...	Lemuel Black.	
Gibbs, ...	Lemuel Black.	
Moore's Sweet, ...	W. H. Skillman.	Lemuel Black.
King of Tompkins County,	S. A. Miller.	Lemuel Black.
Twenty-Ounce Pippin, ...	Lemuel Black.	
Peck's Pleasant, ...	Lemuel Black.	
Nero, ...	Lemuel Black.	
Martha Crab, ...	Lemuel Black.	
Hyslop Crab, ...	Lemuel Black.	
Bailey's Sweet, ...	Lemuel Black.	
Marengo Crab, ...	Lemuel Black.	
Ruckman's Pearmain, ...	W. H. Morgan.	
Baldwin, ...	S. A. Miller.	C. B. Hornor & Son.
Roman Stem, ...	W. H. Morgan.	
Missouri Pippin, ...	W. H. Morgan.	

APPLES.	FIRST PREMIUM.	SECOND PREMIUM.
Sutton's Beauty, ...	David Baird.	W. H. Morgan.
Roxbury Russet, ...	David Baird.	
Porter, ...	Lemuel Black.	
Fallawater, ...	John Repp.	C. B. Hornor & Son.
Bellflower, ...	John Repp.	
Fall Pippin, ...	John Repp.	
Haas, ...	S. A. Miller.	
Holland Pippin, ...	Lemuel Black.	
Winesap, ...	John Repp.	C. M. Bunting.
Clyde Beauty, ...	S. A. Miller.	
Culvert, ...	S. A. Miller.	
Turn of the Lane, ...	John Repp.	
Minch, ...	John Repp.	
Gilliflower, ...	S. A. Miller.	
Reed's Golden, ...	John Repp.	
Gloria Mundi, ...	John Repp.	
English Russet, ...	C. M. Bunting.	
Delaware Red Winter, ...	C. B. Hornor & Son.	C. L. Andrews.
Ideal, ...	C. B. Hornor & Son.	
Indian, ...	C. B. Hornor & Son.	
Mattock, ...	C. B. Hornor & Son.	
Rambo, ...	C. B. Hornor & Son.	
American Golden Russet, ..	C. B. Hornor & Son.	
Smokehouse, ...	C. L. Andrews.	
Newtown Pippin, ...	Henry Hall.	
McIntosh Red, ...	Lemuel Black.	

PEARS.	FIRST PREMIUM.	SECOND PREMIUM.
Bartlett, ...	John Repp.	W. H. Morgan.
Seckel, ...	John Repp.	W. H. Morgan.
Anjou, ...	W. H. Morgan.	
Lawrence, ...	John Repp.	
Kieffer, ...	Lemuel Black.	John Repp.
Le Conte, ...	W. H. Skillman.	
Beurre Clairgeau, ...	Lemuel Black.	John Repp.
Beurre Diel, ...	Lemuel Black.	
Lincoln Coreless, ...	Lemuel Black.	
Sheldon, ...	John Repp.	Lemuel Black.
Duchesse, ...	John Repp.	
Vermont Beauty, ...	W. H. Skillman.	
Worden Seckel, ...	John Repp.	

PEARS.	FIRST PREMIUM.	SECOND PREMIUM.
Winter Nelis, ...	Lemuel Black.	Mrs. A. Repp.
President Dr. Ward, ...	Lemuel Black.	
Rutter, ...	Lemuel Black.	
Columbia, ...	Lemuel Black.	
Dorsot, ...	Lemuel Black.	
Patrick Barry, ...	Lemuel Black.	
Howell, ...	John Repp.	
Champion Quince, ...	W. H. Morgan.	
Canned Fruit, ...	Miss Elva Skillman.	
Display of Violets, ...	C. A. Black.	
Display of Carnations, ...	C. A. Black.	

Post-Office Address of Exhibitors.

William H. Skillman, R. F. D., Belle Mead, N. J.
 C. L. Andrews, Moorestown, Burlington county, N. J.
 Lemuel Black, Highstown, N. J.
 Barton Bros., Marlton, N. J.
 F. S. Weeden, Tennent, N. J.
 W. H. Morgan, Westmont, N. J.
 John Repp, Glassboro, N. J.
 C. B. Hornor & Son, Mount Holly, N. J.
 David Baird, Baird, N. J.
 E. S. Holmes, Riverton, N. J.
 S. A. Miller, Deckertown, N. J.
 Henry Hale, Princeton, N. J.
 C. M. Bunting, Bordentown, N. J.
 Miss Elva Skillman, R. F. D., Belle Mead, N. J.
 Charles Black, Hightstown, N. J.
 Mrs. A. Repp, Glassboro, N. J.

On motion the report was accepted.

Nut Culture in New Jersey.

JOHN J. ALBERTSON, Magnolia, N. J.

Why the subject of Nut Culture was assigned to the writer is difficult to understand. He is a great lover of all kinds of trees, and particularly of those which are both ornamental and productive, and can see no reason why our road sides should not be skirted with such welcome friends.

He would give nut trees the preference over fruit trees. The former are hardier and longer lived. There is no reason why our fence rows and abandoned hillsides should not be planted with black walnut or chestnut trees, both of which are indigenous to the soil of New Jersey.

The writer appreciates the accumulative power of money at interest, but is fully convinced that a walnut grove, for timber alone, would be a profitable investment if planted on cheap lands. Taking some individual chestnut trees as a basis and calculating the income from an acre of land, the figures are appalling when applied in the same ratio to a large tract. Our only wonder is that the whole community does not turn to this one source of money-making. The Lawson and Chadwick schemes alone offer more promising fields, but alas, most of these bonanzas are *ignes fatui*.

The writer's early Quaker training prompts him to advise moderation in all things, and particularly in chestnut culture until better understood. The man who would put his all in a chestnut grove will get disgusted and disheartened, and be glad to sell out at any price before the phenomenal results promised eight years ago are attained.

In 1890 the writer, together with eight other gentlemen, incorporated the first chestnut company and selected one hundred and fifty acres of natural chestnut land. This was already well covered with young sprouts, of a couple of years growth, from sides of large chestnut stumps. We removed all the other kinds of timber and burned the brush. We grafted the suckers to what we *then* considered the best varieties of large nuts. We cut the

scions from individual trees of great merit. Being about the first to adopt this plan of getting a grove, we had much to learn about grafting, and we might say right here, that we think we have not solved the grafting mystery as yet. We grafted about a thousand oak trees and had them bearing chestnuts in profusion, but they were short lived. They are all now dead with one exception. Some years our efforts were reasonably successful. The grafts on the chestnut stocks would all start, but before the summer was over a large percentage would die or blow out. By persistent effort, annually, we finally got a living scion in every sucker on the whole tract.

Now comes one of the disappointing features. The Cooper and Numbo, two excellent varieties, which had done splendidly on individual trees, have so far failed as to crop each year, although the trees, particularly the Numbo, have made a phenomenal growth. The Paragon is now beginning to bear profitably. All the above are European varieties.

To Japan, the land of careful, patient, persistent effort of dwarf men with giant intellects, we are indebted for the Alpha.

Reliance and Parry Giant are wonders under favorable conditions, although less able to stand the rigors of our winters even in southern New Jersey. We lost our very promising crop of Reliance nuts by a severe early September frost in 1904. We have also suffered by late spring frosts destroying the swollen fruit buds.

The old adage that it is impossible to fool all the people all the time is true of Chestnut Culture. Our first thoughts were for size of nuts and quantity, regardless of quality. These took while the novelty lasted. We now find the smaller sweet nuts find a more ready sale and a higher price than the more attractive Japanese nuts. To meet the present market demand we should recommend the Scott and Hannum. The large nuts are excellent when cooked, but we should not attempt to eat them raw any more than we would a sweet potato, or a cranberry. The public needs educating along these lines.

The American and European varieties are subject to a fungus or blight on the foliage, usually making its appearance in August. This blight prevents the fruit burrs from developing the

crop to perfection and also impairs the fruit buds for another year. We suppose Bordeaux Mixture properly applied would correct this evil, if the crop receipts would warrant the expenditure.

This is a question for the State Experimental Station to work up. With the increase of chestnuts comes the increase of insect enemies, and up to date the enemies seem to be on the lead.

We are glad to say that we have never seen a chestnut tree infested with San José scale. For this reason, if for no other, we would rather plant chestnuts than any other variety of deciduous trees. Please do not understand the writer to say that the chestnut is immune against this worst pest that has ever visited our fair land. Perhaps kind Providence does not want to subject any one of His creations to all the enemies, so He has saved the chestnut for the weevil to work upon. At the present we are unable to fight this enemy single handed. There are several remedies suggested. Growing chestnuts in the poultry yard under the keen eye of the old hen is absolute protection. I am speaking from experience. The hen seizes the larva as soon as it bores through the fallen nut and before it can enter the ground. Nature has prompted this grub to vacate the nut as soon as it feels the shock of the fall to the ground. Unless the nuts are gathered very promptly the grubs are beyond our reach, only to come out a perfect beetle with a specially adopted ovipositor, on its wrong end, to trouble us another year. As the beetle does not seem to eat anything and the larvæ are hatched inside the chestnut shell, all ordinary insecticides are of no avail.

During the last chestnut harvest we employed enough help to gather every nut every day and treat it to a bath of bisulphide of carbon vapor. If our neighbors would do the same we are sure the crops of weevils would be reduced. A wormy chestnut is very disgusting and absolutely unsalable.

The writer confesses his ignorance of the proper way of keeping chestnuts after once gathered. The chestnut market is liable to become overstocked just at the time of harvesting, and the question of keeping them for the winter trade presents itself. Our nuts are very liable to mildew and lose that attractive var-

nished appearance. Some of our nuts, that have been held at the commission house three or four days, were reported as being last year's crop carried over. If our nuts are dried, so as to prevent mildew, they shrink about one-third their size, leaving the shell all loose. The European chestnut grower knows how to overcome both these horns of the dilemma. His chestnuts arrive here in casks free from mildew, perfectly crisp, and shells entirely filled out. We need information on this point.

Growing chestnuts for the nuts is an entirely different proposition from growing chestnuts for timber. To bear nuts, the trees must be exposed to the air and sun on all sides. This requires low heading and broad spreading branches as nearly the shape of an apple tree as possible. To grow timber we do not want side branches, but try to crowd the trees and have each one vie with its neighbor in height.

The extreme top of these dense forest trees are the only parts which bear nuts.

We have had experience with most all the vicissitudes to which the chestnut business is subject, such as fire, frost, hail, wind, drought, insect pests, faulty preparation for market, and disappointing commission merchants. Is it any wonder that the fabulous profits predicted eight or ten years ago have proven to be a myth? The writer does not want to discourage any one from engaging in chestnut culture, but fourteen years treasurer-ship of a chestnut company, from which no dividends have as yet been paid, has prevented the writer from extending his holdings in chestnut culture stock until we get a better understanding of the business in all its details. We have Pandora's only blessing left to us: "*We hope for better things.*"

Report of the Committee on the President's Address.

E. P. BEEBE, Chairman.

We favor using improved methods for San José scale.

We fully approve and endorse the opinion expressed that we need improved methods of marketing our fruit. This can be done only by a combination of those most interested, who will employ men whose business it will be to look up the condition of the markets and where to dispose of the surplus.

We fully endorse the necessity of improvement in our freight rates, and would recommend that each member of our Society write to his Congressman on the subject, urging him to use his influence along the lines laid down in the President's address.

Fumigation is more in the hands of the State Entomologist and is not enforced unless it is necessary.

We endorse the President's views on the uniform size and shape of package used in marketing fruit.

We also favor the suggestion of a more friendly relation with other Horticultural and Agricultural Societies, especially with the local societies in our State. We invite their co-operation through our Secretary.

Rev. Mr. Tomlinson—I would like the courtesy of speaking a few words in regard to the chestnut trees. I have been interested for some years in the culture of chestnuts, and my words may possibly be of interest to some. In regard to the Numbo, I have trees that I grafted on good-sized trees ten years ago. One has a fine top and is thirty feet high, but it has borne nothing in that time. I had another one that was grafted at that time on a chestnut stock that was, at least, three inches in diameter. That has been growing about ten years and, I think, has borne about a dozen chestnuts in that time. The Paragon is a good bearer, but we are troubled with the weevil. There is another one that I like and that is the Ridgeley. I do not find it so easily injured, to any extent, by the weevil.

A Member—Has it as large a nut?

Mr. Tomlinson—It is just as large as the Paragon and just as good. It originated in Delaware. The Parry Giant I had for a dozen years, and it has borne nuts this year. There is another one I want to speak of, the Hale. That nut was produced by a man in California, the wizard named Burbanks. It is certainly a wonderful nut. It is a fair size and larger than most of our common nuts, but just as sweet as any native, and is a prodigy in regard to bearing. I grafted some trees and they are determined to bear. We have to switch them with a club to knock off the buds. On both kinds they will bear the same year as grafted. They are only three inches in diameter and the stock only a foot high, yet they will bear nuts. I had a tree two years old and I took off seventy burrs and left fifteen to mature, which they did. It is, so far as I found, entirely free from the weevil. There is another nut, a Japanese nut, that is equally as fine. I can not recall at this moment the name of the man who put it out. He is from Delaware and he calls it the Kent. It is somewhat larger, but very similar to the Hale, and it is free from weevil, and seems to have a peculiarity of the Japanese of "getting there." It bore the first year and this is the second year of its growth of the graft, and they bore a pint a piece. It is such a little tree, not more than five feet high. I think those are some very encouraging facts in the culture of chestnuts. I put out the Japanese, the English and the Spanish alternately, putting a Japanese between the large ones, intending in the future to keep those that do the best. I am very favorably impressed with Japanese chestnuts, and so far as I have found, they are free from weevils.

Mr. Charles Black—I have been trying to grow chestnuts for several years. Several years ago I secured a lot of Spanish chestnuts, supposing a Spanish chestnut to be a Spanish chestnut, but they were seedlings, and I have nearly as many varieties as trees. One among the lot bears enormously. It is not much smaller than a regular Spanish, but when we send those chestnuts to New York they bring more than the large Japanese nuts, and my experience with them is that the Ridgeley and the Paragon are the best I have tried. I never noticed that they were any more liable to the weevil than the larger ones. They sell

well in the market, but the very large nuts for which we used to get \$10 and \$12 per bushel scarcely sell at all now. The Paragon and the Ridgeley are fair quality and fair size, not nearly as large as the Japanese and some of the largest Spanish. The quality is poor and they do not sell nearly so well. If I were going to plant chestnuts for the market I would rather plant Ridgeley and Paragon, probably Paragon, because it is more productive. As this gentleman said about the number, I have one tree that is right in the row with the others, and it is very unproductive.

Mr. Roberts—The chestnut has always been a hobby of mine, and when we started to raise chestnuts a dozen years ago I remember Mr. Parry said he had taken chestnuts to market for years. Nobody ever asked him whether they were good or not, for they all sold at a good price. The time has come when they do not ask whether they are good or not, for every big chestnut is condemned. Go into Philadelphia and you will notice wild chestnuts bring more than any of the big chestnuts. It is the Japanese nuts, the bitter nuts, that condemn the whole lot. The Numbo I raised for fifteen years; as a whole, they did fairly well. I have those and the Paragon growing side by side, and I have not made up my mind which to take out and which to leave. The Paragon is a little heavier, but they rust more than the Numbo.

Dr. Van Fleet—I desire to mention a tree—an old tree—furnished by Mr. J. H. Hale; so far it has borne only one nut, and that was badly weeviled.

President Skillman—We have now the revision of the fruit list, and there is likely to be no end to it. We can let it go a little while, but we have to take trains, and I think this is not the way to revise the fruit list.

Mr. E. S. Black—That fruit list had better not be revised in open meeting. We will spend the balance of the day at it.

Moved by Mr. Ketcham, that it be referred to the Executive Committee. Carried.

President Skillman—I believe that ends the program; if there is anything else I would like to have my attention called to it.

Mr. Hale—I want to take this opportunity, before we adjourn,

to ask this Society to help their committees, more particularly the Executive Committee. Send suggestions to them of anything you think would help to make the meeting interesting. The Executive Committee cannot make it go by themselves and we want your help. The Special Fruit Committee want to know about new fruits. It is their business to report on new fruits, but they do not know where they are.

Mr. Dye—I wanted to take part in the discussion on several of these papers, but I felt that the time was limited. I am very much pleased with this meeting, and I am glad to note that there is an increased interest in the State Horticultural Society. I have been identified with it for twelve or fifteen years, have marked its fluctuations up and down, and I believe the reciprocal relations, established by Mr. Budd and me in the way of advertising these meetings, have contributed to this end. There seems to be a general awakening on the part of farmers; they are taking a new interest, not only in New Jersey, but all over the length and breadth of the land. This all argues well for the future. It shows that the business is of such a character and has so many intricacies that it will require the best minds and best studies of men engaged in the business. I am glad that this meeting has been so well attended. I was much pleased with your President's opening address, and would like to have made some comment upon that. I again invite you to the meeting of the State Board of Agriculture next week. Let us help each other and keep our end up in New Jersey with the other States. I thank you.

Dr. Ward—I just want to bring to the attention of the Society the Special Fruit Committee. This was appointed some years ago for the purpose of judging new fruits. Whoever has new fruits, members of the Society or others, please call the attention of this Committee to them. They will either visit them, or if they will send to any member of the Committee specimens of small fruits, strawberries, blackberries, raspberries, &c., he will put them on his own ground. Of course, it is understood that they go under seal. Every member of this Committee is an honorable man, and if he gives you his word that the fruit will not be propagated you can rely upon it. It will get the attention of this Committee under ordinary culture, and, if it is worthy,

it will be reported to the Society. When we come here another year, whoever is on the Special Fruit Committee I hope will report something that will be of benefit to the Society. Last year I reported on the Ward blackberry; that was one of the good things that the Society could send out under its seal. They are not afraid of it.

Mr. E. S. Black—If there is no further business, I want to make a motion that a vote of thanks be extended to our President, to the Special Committee, to the Executive Committee and all the Committees belonging to this Society. We have had a splendid meeting, and this work has been done by our Committees. We ought also to thank Mr. Dye for what he has said and what he has not said. (Laughter.)

President Skillman—We appreciate the motion, and in behalf of this Society I do thank Mr. Dye for his kind words and his efforts in our behalf. If there be any omissions I have made—I do not say errors, because there are lots of them—please call my attention to them. Before I put the motion to adjourn I wish to thank you for the help and encouragement I have received from you.

Vice-President Roberts—All in favor of the motion made by Mr. Black please say aye.

Mr. Black's motion was then unanimously carried.

President Skillman—Personally, allow me to thank you.

Adjourned.

Remarks on, Secretary Budd.

By DR. JOSEPH B. WARD, Lyons Farms, N. J.

There is a strange solemnity in preparing resolutions for the departed dead, for who can measure the depth of feeling it awakens when a friend has passed into the beyond, of which we do not know? How the tender feelings well up and the heart longs for one more clasp of the hand, one more smile from the pleasant face and one more greeting from the friendly voice. Sorrow and regret mingle bitterly, and, for a time, we cling to earth and its loneliness, missing from this lower planet those who have passed from its trials, its fears and its sufferings. But all the sorrow and regret can neither bring them back nor comfort ourselves. We must look away from earth and sorrow will lose itself in the contemplation of the free, bright souls that are loosed from their prison houses, and are entered into the rest, which they won by patient trial, and into the freedom from all anxiety and care.

Death has entered our ranks a number of times during the past year. It has taken one who stood foremost among us—our late Secretary, Henry I. Budd, of Mount Holly. Though battling with a disease that we, and most of his comrades, knew would eventually prove fatal, still, notwithstanding this fact, he was ever at his post, though at times physically disabled. Mr. Henry I. Budd was born in Burlington county. His ancestors were among the original Colonial proprietors of West Jersey and figured extensively in the formation period of the public affairs of the Colonies. Mr. Budd was prepared for college at Pennington and Mount Holly academies and was graduated, in 1855, from Bucknell University, Pennsylvania. He had resided for forty years in one location in Mt. Holly. He was extensively engaged in farming and has always taken great pride in agricultural pursuits. He was thoroughly impressed with the idea that agriculture, being the foundation industry, should rank higher than any other occupation. Aside from this, he spent his leisure time

with educational and other institutions, acting as President and Secretary of several county and State organizations.

We, the members of the State Horticultural Society, fully understood his worth, and the zeal with which he advanced its interests, ever faithful. How little we realized, as we saw him at our last meeting, that the silver cord was so soon to be loosed, that the golden bowl was so soon to be broken! We can truly say, "Faithful to the last." In his career we see how the years may be rounded into beautiful fullness, with no waste places to mar their symmetry. For a little while we must say farewell to him, and to the others who pass from our midst. They go and others step forward to fill their places, to take up the work which they have laid down, but none can ever make whole the riven chain, and not one can fully occupy the places in our affections, which they claimed by traits peculiarly their own. Time and again we will think of them, and in hours of well-earned leisure they will come back to our remembrance. The glances of the friendly eyes, the tones of the genial voices will return with vivid distinctness until we almost feel the warm handshake, and then we will remember they are gone; gone to another life, and, we fully trust, to a higher and grander life, whose beauty we cannot fully realize until we, too, have crossed to the other side.

Following them in earnest toil, in purity of purpose, we will aim that one day we will meet them in the beautiful land, where all things lead on to perfection. Here we can see them never, though our hearts should ache with loneliness, but there we are told we will find no sorrowful partings, no regrets, no doubts nor fears. There the world will seem to have been only a stopping place in which to receive the initiative into rest and peace and happiness; into the fullness of the existence for which we were created, the completeness of holy ambition, the exquisite perfection of love and happiness unbounded, of friendship unalloyed, of the companionship of the good and true of all ages, and under the never-failing glory of the presence of Him to Whom we owe all that we may attain here and hereafter, and to Whom is praise and love forever and ever.

"Not here ends all;" within the life beyond
Earth's sorrows seem but wandering summer clouds,
Within whose folds the silvery drops are hid,
Which loose bright wings from sombre funeral shrouds.

"Not here ends all;" ah, no! So fair a land
Awaits us when the years have laid us down,
That but to reach its beauteous, restful shores
Is worth earth's cares and death's pale withering crown.

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